```
SYSTEM:OS  - DIALOG OneSearch
  File   2:INSPEC 1898-2006/Dec W3
         (c) 2006 Institution of Electrical Engineers
*File   2: Archive data back to 1898 has been added to File 2.
  File   6:NTIS 1964-2006/Jan W1
         (c) 2006 NTIS, Intl Cpyrght All Rights Res
  File   8:Ei Compendex(R) 1970-2006/Jan W1
         (c) 2006 Elsevier Eng.  Info. Inc.
  File  34:SciSearch(R) Cited Ref Sci 1990-2006/Jan W2
         (c) 2006 Inst for Sci Info
  File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
  File  35:Dissertation Abs Online 1861-2005/Dec
         (c) 2005 ProQuest Info&Learning
  File  65:Inside Conferences 1993-2006/Jan W2
         (c) 2006 BLDSC all rts. reserv.
  File  94:JICST-EPlus 1985-2006/Oct W5
         (c)2006 Japan Science and Tech Corp(JST)
  File  99:Wilson Appl. Sci & Tech Abs 1983-2006/Dec
         (c) 2006 The HW Wilson Co.
  File 144:Pascal 1973-2006/Dec W3
         (c) 2006 INIST/CNRS
  File 305:Analytical Abstracts 1980-2006/Jan W2
         (c) 2006 Royal Soc Chemistry
*File 305: Alert feature enhanced for multiple files, duplicate
removal, customized scheduling.  See HELP ALERT.
  File 315:ChemEng & Biotec Abs 1970-2005/Dec
         (c) 2005 DECHEMA
  File 350:Derwent WPIX 1963-2006/UD,UM &UP=200602
         (c) 2006  Thomson Derwent
*File 350: For more current information, include File 331 in your search.
Enter HELP NEWS 331 for details.
  File 347:JAPIO Nov 1976-2005/Aug(Updated 051205)
         (c) 2005 JPO & JAPIO
  File 344:Chinese Patents Abs Jan 1985-2006/Jan
         (c) 2006 European Patent Office
  File 371:French Patents 1961-2002/BOPI 200209
         (c) 2002 INPI.  All rts. reserv.
*File 371: This file is not currently updating. The last update is 200209.
  File  23:CSA Technology Research Database 1963-2006/Jan
         (c) 2006 CSA.
  File 987:TULSA (Petroleum Abs) 1965-2006/Jan W1
         (c)2006 The University of Tulsa
*File 987: GR (Greece), IS (Iceland), SG (Singapore), and SI (Slovenia)
have been added to AC=.
```

Set	Items	Description
S1	25197	LASER?(2N)(DIE? ? OR DRIVE? ?)
S2	30725231	SUBMOUNT? OR SUBSTRAT? OR SURFACE? OR BASE? OR SUBSTRUCT? OR UNDERSTRUCT? OR UNDERLAY? OR FOUNDATION? OR PANE? OR DISK? OR DISC? OR WAFER? OR CC=(A6855 OR A8115 OR B0520 OR B2570) OR MC=(T03-A01B OR T03-A01B1) OR IC=G11B-005/704
S3	4815322	LID OR LIDS OR COVER????? OR HOUSING OR PACKAG? OR CONTAINER? ?
S4	828935	METAL?????(2N)(LAYER??? OR FILM??? OR COAT??? OR MULTILAYER??? OR MULTI()LAYER????? OR SPACER??? OR INTERLAYER???? OR INTER()LAYER????? OR MULTIPLE()LAYER? ? OR SURFAC? OR REGION? ? OR PAD OR PADS)
S5	9872	METAL?????(2N)SOFT??
S6	17969	COLD(2N)(FLOW????? OR CREEP????)
S7	103	(PHOTODETECT? OR PHOTOSENS???????? OR PHOTO()SENS???????? OR PHOTO()DETECT?)(2N)DIE? ?
S8	1072441	(CONDUCT? OR TRANSFER?)(2N)HEAT? OR (THERMOL? OR THERMAL? OR PREHEAT? OR MELT? OR FUSE? OR FUSING? ? OR FUSION?)(2N)(ELECTRIC? OR COOL????)
S9	1656	IC=H01S-003/04
S10	11095	S1 AND S2
S11	623	S10 AND S3
S12	22	S11 AND S4
S13	1	S12 AND S5
S14	21	S12 NOT S13
S15	0	S14 AND S6
S16	0	S14 AND S7
S17	2	S14 AND ((PHOTODETECT? OR PHOTOSENS???????? OR PHOTO()SENS???????? OR PHOTO()DETECT?))
S18	2	RD (unique items)
S19	19	S14 NOT S17
S20	18	RD (unique items)
S21	0	S20 AND S8
S22	0	S20 AND S9
S23	18	S20
S24	601	S11 NOT S12
S25	1	S24 AND S5
S26	600	S24 NOT S25
S27	0	S26 AND S6
S28	32	S26 AND (PHOTODETECT? OR PHOTOSENS???????? OR PHOTO()SENS??????? OR PHOTO()DETECT?)
S29	0	S28 AND S9
S30	0	S28 AND S8
S31	31	RD S28 (unique items)
S32	184	S9 AND S8
S33	2	S32 AND S6
S34	2	RD (unique items)
S35	182	S32 NOT S33
S36	1	S35 AND S5
S37	181	S35 NOT S36
S38	9	S37 AND S4
S39	9	RD (unique items)
S40	40	S9 AND S1
S41	2	S40 AND S5
S42	2	RD (unique items)
S43	38	S40 NOT S41
S44	1	S43 AND S4

S45	37	S43 NOT S44
S46	10	S45 AND S3
S47	10	RD (unique items)
S48	0	S47 AND (PHOTODETECT? OR PHOTOSENS???????? OR PHOTO()SENS?-??????? OR PHOTO()DETECT?)
S49	1030	S1 AND S3
S50	2	S49 AND S5
S51	2	RD (unique items)
S52	12	S1 AND S6
S53	11	RD (unique items)
S54	1880	S8 AND S6
S55	3	S54 AND (S1 OR S9)
S56	3	RD (unique items)
S57	6	S6 AND S5
S58	6	RD (unique items)
S59	13	S6 AND (S1 OR S9)
S60	12	RD (unique items)
S61	4	S60 AND S2

18/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015554670
WPI Acc No: 2003-616825/200358
XRPX Acc No: N03-491228
Thermoelement fabrication method for thermoelectric cooler for computer, involves fusing thermoelectric **substrate** to thermoelectric material overcoat layers on exposed portions of **metallic layer**
Patent Assignee: IBM CORP (IBMC); INT BUSINESS MACHINES CORP (IBMC)
Inventor: GHOSHAL U S
Number of Countries: 002 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030111516	A1	20030619	US 200115237	A	20011213	200358	B
JP 2003224309	A	20030808	JP 2002333252	A	20021118	200361	
US 6712258	B2	20040330	US 200115237	A	20011213	200423	

Priority Applications (No Type Date): US 200115237 A 20011213
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030111516	A1		19	B23K-001/00	
JP 2003224309	A		15	H01L-035/32	
US 6712258	B2			B23K-001/00	

Abstract (Basic): US 20030111516 A1
Abstract (Basic):
NOVELTY - A pointed tip **substrate** (1602) is **covered** by a **metallic layer** (1604). A portion of the **metallic layer** is **covered** by an insulator (1606) while the other exposed portions of **metallic layer** are **covered** by thermoelectric material overcoat layers (1613-1615). A thermoelectric **substrate** (1617) is fused to the thermoelectric material overcoat layers.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(1) system for fabricating thermoelement; and
(2) thermoelectric cooler.
USE - For fabricating thermoelement for thermoelectric cooler (TEC) (claimed) which is used for cooling integrated circuit chips, main frame and personal computers, radio frequency (RF) communication circuits, magnetic read/write heads for **disk drives**, optical and **laser** devices, **photodetectors** and PCR in genetics. Also for motor vehicle refrigeration system.
ADVANTAGE - Efficiently provides desired cooling and heat transfer capacity, by minimizing the thermal conductivity through thermoelements. Simplifies fabrication process of thin thermoelectric cooler.
DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of fabrication process of thermoelement.
pointed tip **substrate** (1602)
metallic layer (1604)
insulator (1606)
thermoelectric material overcoat layer (1613-1615)
thermoelectric **substrate** (1617)
pp; 19 DwgNo 16I/16

18/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008876203
WPI Acc No: 1992-003474/199201
XRPX Acc No: N92-037799
Driving device for stimulating light emission of semiconductor laser - produces biassing current while compensating fluctuation of threshold current of laser on basis of detected signal from photosensor
Patent Assignee: BROTHER IND CO LTD (BRER)
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 3256761	A	19911115	JP 9055961	A	19900307	199201	B
US 5084887	A	19920128	US 91664847	A	19910305	199207	

Priority Applications (No Type Date): JP 9055961 A 19900307

Abstract (Basic): JP 3256761 A
In continuous prodn. of a resin laminate coated metal sheet, the refractive index of the thermoplastic resin film on the laminate sheet is non-destructively measured. Based on the results, heat to be supplied to the thermoplastic resin film is controlled, whereby the crystal state of the thermoplastic resin film is on-line controlled.
Pref. thermoplsatic resin is a satd. polyester resin. The refractive index measuring method uses a stereoscopic reflection measuring appts. and IR ray thickness meter. For the heat, the output of a heat source (e.g., electric resistance), the speed of a resin laminated metal sheet (e.g., tin plate), etc. may be controlled.
USE/ADVANTAGE - For containers, home electrical appliances, building material, etc. The thermoplastic resin can be given a stable crystal state. The prodn. cost is low. (4pp Dwg.No.0/0)
Abstract (Equivalent): US 5084887 A
The laser drive device comprises a driving circuit for applying the semiconductor laser to a pumping signal including a biasing current and a modulated signal to emit laser light from the laser source. A photosensor detects the laser light and outputs a detection signal representing light amount of the detected laser light. A compensating unit comprising a comparator and an integrating circuit generates a binary-coded biasing signal for producing the biasing current while compensating fluctuation of the threshold current of the semiconductor laser on the basis of the detected signal from the **photosensor** every predetermined period.
An adding circuit adds the biasing signal of the compensating unit to the input modulated signal and outputs the added signals. A constant-current circuit generates a predetermined constant current. The constant current of the constant-current generating unit and the added signals of the adding unit are added to each other and supplied to the semiconductor laser as the pumping signal.
ADVANTAGE - Modulation of image data can be accurately carried out without quantisation error. (First major country equivalent to J03256761) (10pp Dwg.No.3/6

23/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

08130813 INSPEC Abstract Number: B2002-02-2550G-059
Title: Stability improvement at high emission densities for gold thin film photocathodes used in advanced electron beam lithography
Author(s): Gosavi, S.; McCarthy, J.M.; House, J.L.; van Mast, B.G.S.; Janaway, G.; Berglund, C.N.
Author Affiliation: Dept. of Electr. & Comput. Eng., Oregon Graduate Inst. of Sci. & Technol., Beaverton, OR, USA
Journal: Journal of Vacuum Science & Technology B (Microelectronics and Nanometer Structures) Conference Title: J. Vac. Sci. Technol. B, Microelectron. Nanometer Struct. (USA) vol.19, no.6 p.2591-7
Publisher: AIP for American Vacuum Soc,
Publication Date: Nov. 2001 Country of Publication: USA
CODEN: JVTBD9 ISSN: 0734-211X
SICI: 0734-211X(200111)19:6L.2591:SIHE;1-P
Material Identity Number: C067-2001-005
U.S. Copyright Clearance Center Code: 0734-211X/2001/19(6)/2591(7)/$18.00
Conference Title: 45th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication
Conference Date: 29 May-1 June 2001 Conference Location: Washington, DC, USA
Language: English
Abstract: Multi-electron beam lithography has been proposed as a promising approach to achieve high throughput for mask writing and direct **wafer** writing. **Laser driven** photocathodes represent an attractive candidate for multiple beam, high brightness sources. Thin film gold photocathodes that can be handled in air are of particular interest because of their potential for practical sources. In this article we present a study of the degradation mechanisms that change photocurrent yield for thin film gold photocathodes. Two general degradation mechanisms were studied: microstructural changes of the gold thin film and **surface** reactions. Observed microstructural changes included loss of gold **coverage** of the sapphire **substrate**, gold grain growth and an increase in **surface** roughness. A titanium adhesion layer was shown to stabilize **coverage** and proved stable to 700 degrees C by in situ transmission electron microscopy (TEM) experiments on planar sections of the Au/Ti/sapphire thin film stack photocathode. Reactions at the **surface** included physisorption and chemisorption of species and the subsequent reactions that occur when they diffuse to the laser illumination/electron emission site. X-ray photoelectron spectroscopy detected multiple monolayers of hydrocarbons on the **surface** of the Au following deposition and exposure to air. A product layer at the illumination sites as thick as 28 nm was detected using scanning electron macroscopy, atomic force microscopy and TEM following long term (1000-1200 min.) photoyield stability tests. Photoyield versus time plots for all the Au/Ti/sapphire cathodes were similar with an initial high photoyield, a drop to a minimum, then a rise to a second maximum followed by a slow 2%/h decay. Desorption of weakly bound physisorbed and chemisorbed species and growth of a reaction product layer within the electron emission zone are proposed as mechanisms to explain the photoyield behavior. Similar photoyield stability behavior was observed when Pt/Ti/sapphire photocathodes were tested. The photoyield degradation mechanisms observed in these tests are likely to be active on all thin film transmissive photocathodes subjected to high intensity illumination and will add to changes which occur when more reactive thin film photocathodes are used such as cesium telluride. Stability was improved to less than 1%/h for 16 h

within the region of slow decay following the initial transient by illuminating the emission site on the cathode with high intensity UV light with a high O/sub 2/ partial pressure. Emission current densities in excess of 6.0 A/cm/sup 2/ were measured with a Faraday cup. Given these results, this work suggests that higher current densities and stability can be achieved.
Subfile: B

23/3,AB/2 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

1645939 NTIS Accession Number: AD-A248 103/4
Laser Processing for Interconnect Technology
(Final rept. 1 Oct 85-30 Nov 91)
Cole, H. S. ; Liu, Y. S. ; Paik, K.
General Electric Co., Schenectady, NY. Research and Development Center.
Corp. Source Codes: 005452134; 149440
27 Feb 92 132p
Languages: English
Journal Announcement: GRAI9214
Original contains color plates: All DTIC/NTIS reproductions will be in black and white.

NTIS Prices: PC A07/MF A02
The overall objective of this program has been to investigate laser-activated chemistry for fabrication of metal lines on low dielectric constant **substrates** . The need to provide highly conductive metal on polymeric **substrates** (with epsilon < 3.5) is essential for high-speed interconnect technology. Using lasers to fabricate these interconnects offers unique possibilities and advantages over more conventional lithography approaches. Since the laser can be put under computer control, the possibility exists for rapid design modifications. Initial results of work performed on this contract were reported in a Phase I final report entitled, 'Laser-Activated Metal Deposition,' January 31, 1988. This Phase I report **covers** work during the period of October 1, 1985 to December 31, 1987. Work carried out during that time period included a survey of **laser-driven** processes for metal deposition from organometallic compounds and investigations into various gas phase and thin **film metal** deposition processes. The key output of that activity was the development of a process to selectively deposit copper on polyimide. The approach uses a CW laser at 351 nm to irradiate organometallic palladium compounds to selectively deposit catalytic amounts of palladium on polyimide. Subsequent immersion of the irradiated samples in an electroless copper solution resulted in selective copper deposition. Since only a few monolayers of palladium were needed to catalyze the electroless copper process, fast writing speeds of up to 10 cm/s were achieved.

23/3,AB/3 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

12275039 Genuine Article#: 747JR Number of References: 19
Title: Electronic excitation and dynamic promotion of a **surface**

reaction (ABSTRACT AVAILABLE)
Author(s): Denzler DN (REPRINT) ; Frischkorn C; Hess C; Wolf M; Ertl G
Corporate Source: Max Planck Gesell,Fritz Haber Inst,Faradayweg 4-6/D-14195 Berlin//Germany/ (REPRINT); Max Planck Gesell,Fritz Haber Inst,D-14195 Berlin//Germany/; Free Univ Berlin,Fachbereich Phys,D-14195 Berlin//Germany/
Journal: PHYSICAL REVIEW LETTERS, 2003, V91, N22 (NOV 28), 226102
ISSN: 0031-9007 Publication date: 20031128
Publisher: AMERICAN PHYSICAL SOC, ONE PHYSICS ELLIPSE, COLLEGE PK, MD 20740-3844 USA
Language: English Document Type: ARTICLE
Abstract: The mechanism of recombinative desorption of hydrogen from a Ru(0001) **surface** induced by femtosecond-laser excitation has been investigated and compared to thermally initiated desorption. For the **laser-driven** process, it is shown that hot **substrate** electrons mediate the reaction within a few hundred femtoseconds resulting in a huge isotope effect between H-2 and D-2 in the desorption yield. In mixed saturation **coverages**, this ratio crucially depends on the proportions of H and D. Deviations from second order desorption kinetics demonstrate that the recombination is dynamically promoted by excitation of neighboring, but nonreacting adatoms. A concentration dependent rate constant which accounts for the faster excitation of H versus D is proposed.

23/3,AB/4 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

08625704 Genuine Article#: 308ZG Number of References: 16
Title: Pulsed UV laser induced desorption of ions from aluminum (ABSTRACT AVAILABLE)
Author(s): Taylor DP (REPRINT) ; Helvajian H
Corporate Source: AEROSP CORP,2350 EL SEGUNDO BLVD/EL SEGUNDO//CA/90245 (REPRINT)
Journal: SURFACE SCIENCE, 2000, V451, N1-3 (APR 20), P68-75
ISSN: 0039-6028 Publication date: 20000420
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS
Language: English Document Type: ARTICLE
Abstract: A study of pulsed W laser induced desorption (**LID**) has been performed on an Al(111) sample. The positive ion desorption was investigated at low laser fluence, in a regime in which the ion yield exhibits a highly non-linear dependence on the laser fluence. The peak of the kinetic energy distribution of the desorbed ions has been measured to be about 15 eV. This result is consistent with the conjecture that the ion departing the **metal surface** can acquire a kinetic energy kick from a process associated with plasmon annihilation. The Al+ ion kinetic energy peak is asymmetric and about 3 eV full-width at half-maximum (FWHM). This experiment indicates that plasmon excitation can play a significant role in laser stimulated desorption induced by electronic transitions (DIET).

23/3,AB/5 (Item 3 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

01323665 Genuine Article#: GP063 Number of References: 59
Title: PHOTOSTIMULATED CHEMISTRY AT THE METAL ADSORBATE INTERFACE (

Stahloberflaeche untersucht. Zwei martensitische Kaltarbeitsstaehle X30CrMoN15 1 und X20CrMoVN15 1 sowie X39CrMo17 1 als Vergleich werden in Hinblick auf die Durchfuehrbarkeit des Verfahrens, Mechanismen der Haertungsvorgaenge und Auswirkungen auf die Materialeigenschaften behandelt. Betrachtet werden Verfahrensweise der Laserwaermebehandlung, Metallografie und Mikroskopie der Metallproben, Mikrohaertebestimmung, Untersuchungen des Ermuedungsverhaltens an Luft und in kuenstlichem Meerwasser, Untersuchungen des unidirektionalen und reversierenden Gleitverschleissverhaltens, Einfluss der Laserbehandlung auf das Stahlgefuege und das Korrosionsverhalten. Eine Kurzzeitwaermebehandlung der Metalloberflaeche durch Laserbestrahlung fuehrt zu einer weiteren martensitischen Haertung der Oberflaeche, wobei insbesondere die Verschleissbestaendigkeit erhoeht wird. Ferner fuehrt **die Laserbehandlung** zu Druckeigenpannungen in der Metalloberflaeche mit moeglichen positiven Wirkungen auf die Ermuedung, Veraenderungen in der Ausscheidungsmorphologie mit teilweiser Aufloesung von Nitriden zur Erhoehung des Gehalts an geloestem Stickstoff und Chrom und Verbesserung der Korrosionsbestaendigkeit.

23/3,AB/7 (Item 2 from file: 315)
DIALOG(R)File 315:ChemEng & Biotec Abs

505800 CEABA Accession Number: 34-04-000897 DOCUMENT TYPE: Journal
Title: A new low for nonlinear optics
Orig. Title: Ein neuer Trumpf in der nichtlinearen Optik
AUTHOR: Downer, M.C.
CORPORATE SOURCE: Univ. of Texas, Austin TX, USA
JOURNAL: Science, Volume: 298, Issue: 5592, Page(s): 373-375
CODEN: SCIEAS ISSN: 00368075
PUBLICATION DATE: 2002 (20020000)
ABSTRACT: In the 1990s, a new class of synthetic nonlinear optical multilayer structures was developed and commercialised with efficient conversion of weaker than ever fixed-frequency beams from small solid-state lasers to tunable visible and infrared radiation e.g. for applications in materials processing and remote sensing. Along an independent line, it had been found that spontaneous Raman scattering, used to fingerprint molecular vibrations, could be enhanced dramatically by attaching molecules to rough **metal surfaces** or **metal** nanoparticles, enabling Raman spectra of single molecules. Now a new milestone in the nonlinear optics of molecular gases is added with the conversion of microjoule energy green laser pulses propagating through the hydrogen gas in the hollow core (HC) of a glass photonic-crystal fibre (PCF) to red pulses by stimulated Raman scattering (SRS) from the hydrogen stretch vibration. With microjoule, the energy of the migrating laser pulses was two orders of magnitude weaker than that of previous demonstrations in gases. The degree of conversion was 30 %. Reductions in fibre loss and laser line width should lower the threshold energy for low-gas SRS even further. While powerful pump pulses and dense Raman media have been necessary before to achieve useful gain levels in Raman-shifted lasers, the novel waveguide maintains small, smooth, well-overlapped pump and Stokes mode profiles, so that the Stokes wave grows in a controlled manner. Due

to automatic phase-match of pump and Stokes waves, high conversion is possible with very low input powers and Raman cross sections for long, low-loss fibres. The developed new, meter-long HC-PCF has a transmission bandwidth **covering** the whole visible and infrared range. Compared to their solid-state counterparts, gaseous nonlinear media are cheap, replenishable, interchangeable, and variable in density, and exhibit sharp spectral lines, potentially enabling versatile Raman shifters for low-power lasers and high-resolution SRS spectroscopy.

ABSTRACT: In den 90er Jahren wurde eine neue Klasse synthetischer, nicht linearer, optischer Mehrschichtstrukturen entwickelt und kommerziell verwertet fuer die effektive Umwandlung von Festfrequenz-Strahlen von kleinen Feststofflasern mit schwaecherer Energie als je zuvor einstellbar in sichtbarer und Infrarotstrahlung, z. B. fuer Anwendungen in der Materialbearbeitung und der Telemetrie. Entlang einer anderen Entwicklungslinie war schon frueher entdeckt worden, dass spontane Raman-Streuung, die fuer Fingerprint-Molekuelschwingungen verwendet wurde, dramatisch verstaerkt werden konnte durch Aufbringen von Molekuelen auf raue Metalloberflaechen oder Metallnanoteilchen, wodurch Raman-Spektren einzelner Molekuele moeglich wurden. Jetzt gibt es einen neuen Meilenstein in der nicht linearen Optik molekularer Gase mit der Umwandlung von gruenen Laserpulsen von Mikrojoule-Energie, die sich durch das Wasserstoffgas im hohlen Kern (HC) einer Glasphotonenkristallfaser fortpflanzen, in rote Pulse von der stimulierten Raman-Streuung (SRS) der Wasserstoff-Streckschwingung. Mit
Mikrojoule lag **die** Energie der **Laserpulse** um zwei Groessenordnungen unter denen von frueheren Demonstrationen in Gasen. Der Umwandlungsgrad lag bei 30%. Durch Verringerung der Faserverluste und der **Laserstrahlbreite** sollte **die** Energieschwelle fuer Low-Gas-SRS noch weiter gesenkt werden. Waehrend bisher starke Pumppulse und dichte Raman-Medien noetig waren, um verwendbare Level in Lasern mit Raman-Verschiebung zu erreichen, benoetigt der neue Wellenleiter kleine, glatte, gut ueberlappende Pump-und Stokes-Modenprofile fuer ein kontrolliertes Wachsen der Stokes-Wellen. Wegen der automatischen Uebereinstimmung der Phasen von Pump-und Stokes-Wellen ist bei langen Fasern mit niedrigem Verlust ein hoher Umwandlungsgrad bei sehr niedrigen Inputenergien und kleinen Raman-Querschnitten moeglich. Die entwickelte neue, meterlange HC-PCF hat eine Transmissionsbandbreite, die den gesamten sichtbaren und Infrarotbereich abdeckt. Im Vergleich zu ihren Feststoff-Gegenstuecken sind gasfoermige nicht lineare Medien billig, nachfuellbar, austauschbar und haben variierbare Dichte und scharfe Spektrallinien und ermoeglichen vielleicht Raman-Shifter fuer Niedrigenergie-Laser und hochaufloesende SRS-Spektroskopie.

23/3,AB/8 (Item 3 from file: 315)
DIALOG(R)File 315:ChemEng & Biotec Abs

499577 CEABA Accession Number: 33-12-000977 DOCUMENT TYPE: Journal
Title: Mirro fabrication on optical fibres using maskless excimer laser-assisted methods
Orig. Title: Spiegelherstellung aus optischen Fasern mit Hilfe maskenloser Excimerlaser-unterstuetzer Methoden

AUTHOR: Kordas, K. ; Pap, A.E. ; Lyoeri, V. ; Uusimaeki, A. ; Vaehaekangas, J. ; Leppaevuori, S.
CORPORATE SOURCE: Univ. of Oulu, FIN
JOURNAL: Surf. Coat. Technol., Volume: 155, Issue: 2/3, Page(s): 285-288
CODEN: SCTEEJ ISSN: 02578972
PUBLICATION DATE: 2002 (20020000)
ABSTRACT: Optical fibres equipped either with internal or end mirrors play an important role in many applications of optoelectronics. When the reflective layer is desired only on the core, masks have to be used in order to avoid **covering** other **surfaces** of the fibre. In this work, two laser-assisted area-selective metallisation processes are introduced in which the difficulties arising from the masking are eliminated. Firstly, a catalyst Pd thin film is deposited on the **surface** to be **metallised** using either liquid-phase chemical laser-assisted deposition (in the additive process) or chemical plating method (subtractive procedure). In both cases, the metallisation is **based** on a chemical reaction in which the reduction of palladium-amine complex ions is executed by formaldehyde. Secondly, the Pd **covered** parts of the processed **surface** are chemically plated with Cu by auto-catalytic electroless deposition of copper. The investigations were carried out on standard single mode optical fibres (SiO(sub 2) doped with GeO(sub 2) in the core) with core and cladding diameters of 9 and 125 mu m respectively. In situ reflectance measurements (at 1350 nm) made possible to tailor the metal growth and reach the proper mirror thickness. Both methods were found to be suited to create reflective copper coatings with maximum relative reflectivity of about 9 dB.

ABSTRACT: In der Optoelektronik haben verspiegelte optische Fasern eine grosse Bedeutung. Dabei ist is wichtig, nur den Kern und nicht die Ummantelung zu verspiegeln. I.Allg. benuetzen die verschiedenen Verfahren Masken, um das zu erreichen. Zwei Methoden werden vorgestellt, die ohne Maske eine Verspiegelung durchfuehren koennen. Bei der subtraktiven Methode wird die Faser chemisch aus einer Loesung zunaechst mit einer Palladium-und dann mit einer Kupferschicht versehen und der Belag auf dem Mantel anschliessend mit dem **Laser** abgetragen. **Die** Schichtdicke wird durch Reflexion bei 1350 nm in situ bestimmt. Bei der anderen Methode wird das Faserende einer Palladium-haltigen Loesung ausgesetzt und durch Laserbeschuss im Bereich des Kerns das Palladium abgeschieden. In einem Kupferbad aus Kupfersulfat wird anschliessend Kupfer abgeschieden.

23/3,AB/9 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

017018592
WPI Acc No: 2005-342909/200535
XRAM Acc No: C05-106119
XRPX Acc No: N05-279993
Selective plating on circuit **substrate** for circuit **package**, by creating potential voltage difference between first metal pattern and metal source comprising metal of first type, and plating first metal pattern with metal of first type
Patent Assignee: BENNETT J A (BENN-I); FINOT M (FINO-I); KOHLER R (KOHL-I); LAKE R C (LAKE-I); NGUYEN T (NGUY-I); YAO X (YAOX-I)
Inventor: BENNETT J A; FINOT M; KOHLER R; LAKE R C; NGUYEN T; YAO X

Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20050077609	A1	20050414	US 2003674370	A	20030930	200535	B

Priority Applications (No Type Date): US 2003674370 A 20030930
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20050077609	A1		11	H01L-023/52	

Abstract (Basic): US 20050077609 A1
Abstract (Basic):

NOVELTY - A circuit **substrate** is selectively plated by: creating potential voltage difference between first metal pattern and metal source (260) comprising metal of first type, where voltage potential of first metal pattern is less than voltage potential of metal source; and plating first metal pattern with metal of first type, and comprising attracting metal of first type to voltage potential of first metal pattern.

DETAILED DESCRIPTION - Selective plating on a circuit **substrate** comprises: applying a first metal pattern to a **surface** of the **substrate**; applying a second metal pattern (130) to the **surface** of the **substrate**, the second metal pattern being electrically isolated from the first metal pattern; creating a potential voltage difference between the first metal pattern and a metal source comprising a metal of a first type, where the voltage potential of the first metal pattern is less than the voltage potential of the metal source; and plating the first metal pattern with the metal of a first type, and comprising attracting the metal of a first type to the voltage potential of the first metal pattern.

An INDEPENDENT CLAIM is also included for a circuit **package**, comprising: a **base** portion having a first **surface**, a second **surface**, a first via, a second via, and pins; a first metal pattern disposed on the first **surface**; a second **metal** pattern disposed on the second **surface**, and electrically coupled to the first via; and a third metal pattern (140) disposed on the second **surface**, and arranged to form a gap to electrically isolate the second metal pattern from the third metal pattern, the third metal pattern being electrically coupled to the first metal pattern through the second via.

USE - The invention is for selective plating on a circuit **substrate** useful for a circuit **package** (claimed), for optoelectronic transponder devices, such as an optical transmitter (e.g. a **laser driver**, a **laser** diode, or an isolator), or an optical receiver (a trans-impedance amplifier or a pin diode).

ADVANTAGE - The invention is efficient and of low-cost, while avoiding radio frequency interference and maintaining a hermetic seal.

DESCRIPTION OF DRAWING(S) - The figure is a representation of a selective plating process.

Second metal pattern (130)
Third metal pattern (140)
Metal source (260)
Negative electrical source (270)
Positive electrical source (280)
pp; 11 DwgNo 4/4

23/3,AB/10 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016907011
WPI Acc No: 2005-231299/200524
Related WPI Acc No: 2005-589334; 2005-589335
XRAM Acc No: C05-073477
XRPX Acc No: N05-190444
Manufacture of integrated circuit **substrate** for interconnecting semiconductor **die**, by **laser**-drilling perforations from second side of prefabricated dielectric **layer**, and depositing **metal** through perforations to form blind vias
Patent Assignee: HINER D (HINE-I); HUEMOELLER R P (HUEM-I); RUSLI S (RUSL-I)
Inventor: HINER D; HUEMOELLER R P; RUSLI S
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20050041398	A1	20050224	US 2002138225	A	20020501	200524 B
			US 2002261868	A	20021001	
			US 2003392737	A	20030319	
			US 2004947124	A	20040922	

Priority Applications (No Type Date): US 2003392737 A 20030319; US 2002138225 A 20020501; US 2002261868 A 20021001; US 2004947124 A 20040922
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20050041398	A1		8	H05K-005/00	CIP of application US 2002138225
					CIP of application US 2002261868
					Div ex application US 2003392737

Abstract (Basic): US 20050041398 A1
Abstract (Basic):
NOVELTY - An integrated circuit **substrate** (10F) is manufactured by mounting a prefabricated dielectric layer (12) having a first conductive pattern disposed on its first side in a laser drilling machine, laser-drilling perforations from a second side of the prefabricated dielectric layer through to the back side of the first conductive pattern, and depositing metal through the perforations to form blind vias.
DETAILED DESCRIPTION - Manufacture of an integrated circuit **substrate** comprises:
(1) mounting a prefabricated dielectric layer having a first conductive pattern disposed on its first side in a laser drilling machine, the prefabricated dielectric layer having a second side opposing the first side;
(2) laser-drilling perforations from the second side of the prefabricated dielectric layer through to the back side of the first conductive pattern; and
(3) depositing metal through the perforations to form blind vias to the first conductive pattern from the second side of the prefabricated dielectric layer.
An INDEPENDENT CLAIM is also included for a method for manufacturing an integrated circuit **package** comprising:
(1) mounting a semiconductor die to a first side of a dielectric layer; and
(2) connecting electrical terminals of the semiconductor die to the first conductive pattern.
USE - The invention is used for the manufacture of an integrated circuit **substrate** for interconnecting a semiconductor die (32A).
ADVANTAGE - The invention provides improved interconnect density and a low associated manufacturing cost.
DESCRIPTION OF DRAWING(S) - The figure shows a pictorial diagram of

the integrated circuit.
Substrate (10F)
Prefabricated dielectric layer (12)
Adhesive layer (13)
Solder mask (14)
Die (32A)
pp; 8 DwgNo 4A/4

23/3,AB/11 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016073559
WPI Acc No: 2004-231420/200422
XRPX Acc No: N04-183076
Method of manufacturing **substrate** with optical waveguide, involves **covering surface** of **substrate** that is opposite to **surface** for forming waveguide with mask layer, before immersing **substrate** into ion exchange liquid
Patent Assignee: MITSUBISHI CABLE IND LTD (DAIE)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2004045522	A	20040212	JP 2002200175	A	20020709	200422	B

Priority Applications (No Type Date): JP 2002200175 A 20020709
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2004045522	A		10	G02B-006/13	

Abstract (Basic): JP 2004045522 A
Abstract (Basic):
NOVELTY - A liquid source for ion exchange, is heated to temperature (T1). The **surface** of **substrate** (1) made of ferroelectric crystal or optical glass opposite to **surface** for forming optical waveguide (12), is **covered** by a mask layer (4) consisting of metal or **metal** oxide **film**, before immersing **substrate** into heated liquid source while forming the optical waveguide.
USE - For manufacturing **substrate** with optical waveguide for use as second harmonic (SHG) component to produce high power laser beam for e.g. blue **laser disk drive** or **laser** printer.
ADVANTAGE - By using simple and reliable method, excessive stress or shrinkage produced in **substrate** during immersion of **substrate** into ion exchange liquid source is suppressed effectively, thereby yield of **substrate** with waveguide is improved, while its manufacturing cost is reduced.
DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of the **substrate** with optical waveguide during manufacturing process. (Drawing includes non-English language text).
substrate (1)
mask layers (2,4)
resist layer (3)
optical waveguide (12)
pp; 10 DwgNo 1/4

23/3,AB/12 (Item 4 from file: 350)

DIALOG(R)File 350:Derwent WPIX

011547186
WPI Acc No: 1997-523667/199748
XRPX Acc No: N97-436329
Optical electronic component used in light source of optical memory system - has HF oscillation circuit which is **covered** by wiring to **drive laser** diode
Patent Assignee: HITACHI LTD (HITA); HITACHI TOBU SEMICONDUCTOR KK (HITA-N)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 9251655	A	19970922	JP 9660704	A	19960318	199748	B

Priority Applications (No Type Date): JP 9660704 A 19960318
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 9251655	A		6	G11B-007/125	

Abstract (Basic): JP 9251655 A
The electronic component has a main body (14) which equips a laser diode (16). The laser diode which irradiates laser light (L), is driven by an oscillation circuit (17) with a HF current. An optical output switch is turn OFF at high speed by the laser diode.
The HF oscillation current is **covered** by a wiring (23) electrically. A thin film is formed on a flexible wiring board (15) having a **metallic surface** (15C).
ADVANTAGE - Avoids unnecessary radiation of em wave. Reduces number of parts and cost of unit by reducing manday for assembly.
Dwg.3/6

23/3,AB/13 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008575034
WPI Acc No: 1991-079067/199111
XRAM Acc No: C91-033865
XRPX Acc No: N91-060968
UV-**laser** cut embossing **die** - comprises patterned layer of polymer e.g. polyimide
Patent Assignee: ANONYMOUS (ANON)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
RD 322084	A	19910210				199111	B

Priority Applications (No Type Date): RD 91322084 A 19910120

Abstract (Basic): RD 322084 A
The die is comprised of a patterned layer of a polymer, such as polyimide. The die is prepd. by applying a thin layer of a plastic material to a flat **metal surface**, such as stainless steel.
The plastic material is applied, e.g., by spraying, rolling, or laminating a thin film of the plastic to the metal. The plastic must withstand the embossing pressure and temp. (20-95 deg.C) without deformation. Polyimide or polyesters such as Kapton H or Mylar

(trademarks of E.I. dupont deNemours co.) are pref. A **metal layer** can also be a sheet of molybdenum, copper, etc. The polyimide or plastic layer is coated with a layer of material which is opaque to and reflects u.v. radiation, such as a layer of sputtered chromium of thickness approx. 400 Angstroms. The desired conductor pattern is photoetched into the chromium layer by standard techniques. An u.v. laser beam with wavelengths less than approx. 220nm is then scanned over the **surface** to remove the plastic material in the areas which are not **covered** by the chromium. The laser beam cuts the polyimide layer with a taper which may be adjusted by the focal length of the laser focusing optics. For example, tapers 20-26 deg. result in an aspect ratio (depth to width) of 1-1.3 in high resolution patterns. The chromium 14 on the horizontal **surfaces** of the die protects the plastic layer 12 from abrasion of ceramic particles in the ceramic green sheet when the green sheet is embossed. For greater abrasion resistance another **metal layer** may be plated on the Cr layer.

USE - The die is used to emboss a pattern of indentations into the **surface** of a laminated stack of ceramic green (uncured) sheets and, after firing, to metalise the indentation

23/3,AB/14 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007673772
WPI Acc No: 1988-307704/198843
XRPX Acc No: N88-233458
Buried heterostructure laser diode with lateral current limitation - has channels etched on either side of active strip with spacer layers defining precise lateral edges
Patent Assignee: SIEMENS AG (SIEI)
Inventor: THULKE W
Number of Countries: 012 Number of Patents: 008
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 8808215	A	19881020	WO 88DE234	A	19880418	198843	B
DE 3713045	A	19881027	DE 3713045	A	19870416	198844	
DE 3713133	A	19881103	DE 3713133	A	19870416	198845	
JP 2503047	W	19900920				199044	
EP 432150	A	19910619	EP 88903178	A	19880418	199125	
US 5027364	A	19910625	US 89455411	A	19891218	199128	
EP 432150	B1	19930127	EP 88903178	A	19880418	199304	
			WO 88DE234	A	19880418		
DE 3877973	G	19930311	DE 3877973	A	19880418	199311	
			EP 88903178	A	19880418		
			WO 88DE234	A	19880418		

Priority Applications (No Type Date): DE 3713133 A 19870416; DE 3713045 A 19870416
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 8808215	A	G	33		
Designated States (National): JP US					
Designated States (Regional): AT BE CH DE FR GB IT LU NL SE					
EP 432150	A				
Designated States (Regional): DE FR GB					
EP 432150	B1	G	21	H01S-003/19	Based on patent WO 8808215
Designated States (Regional): DE FR GB					

DE 3877973 G H01S-003/19 Based on patent EP 432150
Based on patent WO 8808215

Abstract (Basic): EP 432150 A

Laser diode having a buried semiconductor double heterostructure and lateral current limitation, this laser diode containing at least one laser-active strip (3) between a buffer layer (2,32,42) and a **cover** layer (6,6',34,44,54), and having metal contacts, and there being provided to the side of the laser-active strip (3) and extending parallel thereto lateral, etched channels (8,8',80,81,82), characterised in that - the laser-active strip (3) is separated from the lateral channels by laterally arranged semiconductor material, - the lateral limitation of the laser-active strip (3) extends as rectilinearly as is possible using semiconductor layers produced by masking technology. (Dwg.1/12)

WO 8808215 A

The buried heterostructure laser diode has at least one laser active strip (3) between a buffer layer (2) applied to a **substrate** (1) and an overlying layer (6). Lateral channels (8) are etched on either side of the active strip (3) parallel to the latter, for lateral current limitation, after application of side spacer layers (5) to the sides of the active strip for precise delination of the side edges. The spacer layers are made of a semiconductor material which is resistant to the etching soln. used for selective etching of the lateral channels (8).

Pref. a contact strip (10) is applied to the overlying layer in alignment with the active strip, in turn overlaid by a structural metal contact (11).

ADVANTAGE - Low threshold current with high differential efficiency and high output.

1/12

Abstract (Equivalent): EP 432150 B

Laser diode having a buried semiconductor double heterostructure and lateral current limitation, this laser diode containing at least one laser-active strip (3) between a buffer layer (2,32,42) and a **cover** layer (6,6',34,44,54), and having metal contacts, and there being provided to the side of the laser-active strip (3) and extending parallel thereto lateral, etched channels (8,8',80,81,82), characterised in that - the laser-active strip (3) is separated from the lateral channels by laterally arranged semiconductor material, - the lateral limitation of the laser-active strip (3) extends as rectilinearly as is possible using semiconductor layers produced by masking technology.

Dwg.1/12

Abstract (Equivalent): US 5027364 A

The laser diode of a buried double heterostructure that uses lateral current limitation, has a **substrate**, a buffer layer on the **substrate**, and a **cover** layer. At least one laser-active exists between the buffer layer and the **cover layer**. **Metal** contacts are provided on the **laser** diode to **drive** the **laseractive** stripe. Lateral, etched channels are provided laterally of the laseractive stripe and processing parallel to the stripe. A semiconductor material laterally limits the laseractive stripe. The lateral limitation of the laseractive stripe proceeds as straight-line as possible upon employment of semiconductor layers manufactured with a mask technique. ADVANTAGE - Easily manufacturable.

(11pp

23/3,AB/15 (Item 1 from file: 347)

08168671
NITRIDE SEMICONDUCTOR LASER ELEMENT

PUB. NO.: 2004-281431 [JP 2004281431 A]
PUBLISHED: October 07, 2004 (20041007)
INVENTOR(s): SUGIMOTO YASUNOBU
YONEDA AKINORI
TAKEYA MOTONOBU
UCHIDA SHIRO
IKEDA MASAO
APPLICANT(s): NICHIA CHEM IND LTD
SONY CORP
APPL. NO.: 2003-066593 [JP 200366593]
FILED: March 12, 2003 (20030312)

ABSTRACT

PROBLEM TO BE SOLVED: To provide a nitride semiconductor laser element in which the contact resistance between the electrode and the semiconductor layer is small and, in addition, the adhesion between the electrode and layer is good even when the **laser** element is **driven** by feeding a large current, and which has an extremely excellent adhesion and mechanical strength at the interface between an insulating film and the electrode and such laser element characteristics that light confinement is stable in the electrode in the striped direction of a ridge, and to provide a method of manufacturing the laser element.

SOLUTION: In this nitride semiconductor laser element, a ridge structure is formed in a laminated nitride semiconductor. This laser element is provided with an insulating film 113 formed in a state where the film 113 is extended from the side face of a ridge onto the flat **surface** of a continuously formed semiconductor layer and a p-side electrode 120 **covering** the top **surface** of the ridge and insulating film 113. The electrode 120 has a **metal layer** composed of the element of the platinum group in its area which is in contact with the insulating film 113 and a single crystal of the element of the platinum group in its interface which is in contact with the insulating film 113.

23/3,AB/16 (Item 2 from file: 347)

01609986
SEMICONDUCTOR LASER DEVICE

PUB. NO.: 60-088486 [JP 60088486 A]
PUBLISHED: May 18, 1985 (19850518)
INVENTOR(s): KUME MASAHIRO
HAMADA TAKESHI
SHIMIZU YUICHI
ITO KUNIO
WADA MASARU
TAJIRI FUMIKO
APPLICANT(s): MATSUSHITA ELECTRIC IND CO LTD [000582] (A Japanese Company

or Corporation), JP (Japan)
APPL. NO.: 58-196326 [JP 83196326]
FILED: October 20, 1983 (19831020)
JOURNAL: Section: E, Section No. 344, Vol. 09, No. 234, Pg. 106, September 20, 1985 (19850920)

ABSTRACT

PURPOSE: To reduce the noise during APC drive and eliminate a ghost by enhancement of the reflectance on the lower-side end **surface** by a method wherein part of the laser beam emitted from the upper-side end **surface** of a semiconductor laser element is made as the monitor beam.

CONSTITUTION: A photo transmitting plate 10 is inclined against the upper **surface** of a **metallic package** 11, and a photo diode 7 the photoelectric conversion element is bonded in parallel with the main **surface** of a stem 4. Part of the laser beam emitted from the upper-side end **surface** of the semiconductor laser element 6 reflects on the inclined plate and is received by the photo diode as the monitor beam, which is photoelectrically converted and then outputted as the monitor current. Since part of the laser beam emitted outside is utilized as the monitor beam, the noise of the laser beam during APC **drive** of the **laser** element can be reduced.

23/3,AB/17 (Item 1 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0004355788 IP ACCESSION NO: N92-29559
Laser processing for interconnect technology (Final Report, 1 Oct. 1985 -30 Nov. 1991)

COLE, H S; LIU, Y S; PAIK, K
General Electric Co., Schenectady, NY. Research and Development Center.
PUBLICATION DATE: 1992

CONFERENCE:
, UNITED STATES

DOCUMENT TYPE: Report
RECORD TYPE: Abstract
LANGUAGE: ENGLISH
REPORT NO: AD-A248103
NUMBERS: Contract: N00014-85-C-0890
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
The overall objective of this program was to investigate laser-activated chemistry for fabrication of metal lines on low dielectric constant **substrates**. The need to provide highly conductive metal on polymeric **substrates** (with epsilon less than 3.5) is essential for high-speed interconnect technology. Using lasers to fabricate these interconnects offers unique possibilities and advantages over more conventional lithography approaches. Since the laser can be put under computer control, the possibility exists for rapid design modifications. Initial results of work performed on this contract were reported in a Phase 1 final report entitled, 'Laser-Activated Metal Deposition', 31 Jan. 1988. This Phase 1 report **covers** work during the period of 1 Oct. 1985 - 31 Dec. 1987. Work carried out during that time period included a survey of **laser-driven** processes for metal deposition from organometallic compounds

and investigations into various gas phase and thin **film metal** deposition processes. The key output of that activity was the development of a process to selectively deposit copper on polyimide. The approach uses a CW laser at 351 nm to irradiate organometallic palladium compounds to selectively deposit catalytic amounts of palladium on polyimide. Subsequent immersion of the irradiated samples in an electroless copper solution resulted in selective copper deposition. (GRA)
Abstract

23/3,AB/18 (Item 2 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0001687506 IP ACCESSION NO: A79-42429
Comparison of Fourier and laser spectroscopy in the far-infrared-submillimeter range

PERKOWITZ, S; HENRY, R L; TANNER, D B
Emory University, Atlanta, Ga. [PERKOWITZ]

Applied Optics, v 18, p 2349-2351, 15 July 1979
PUBLICATION DATE: 1979

PUBLISHER: Optical Society of America, Inc., 2010 Massachusetts Ave, N W, Washington, DC, 20036-1023
COUNTRY OF PUBLICATION: USA
PUBLISHER URL: http://www.osa.org
PUBLISHER EMAIL: info@osa.org

CONFERENCE:
, United States

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
ISSN: 0003-6935
NUMBERS: Contract: NSF DMR-75-13917
FILE SEGMENT: Aerospace & High Technology

ABSTRACT:
State-of-the-art Fourier spectrometers are compared with a recently built laser system by describing measurements made on the same sample, a thin **film** of the **metallic** superconductor V3Si deposited on a sapphire **substrate**. Two Fourier spectrometers are employed in these measurements. A lamellar grating interferometer **covered** 6-30/cm, while a Michelson interferometer was used over 50-200/cm. The laser spectrometer used a 20-W CW CO2 **laser** to **drive** a waveguide-type of far-IR cavity. An internal Fabry-Perot interferometer provided line tuning in the cavity, and additional line filtering and wavelength measurement were provided by a second external Fabry-Perot. No serious disparity between results from the older Fourier and the new laser methods is observed. The strengths of each technique are **discussed**. It is shown that the ideal far-IR submillimeter spectral source remains elusive. However, the combination of Fourier and laser methods gives the flexibility of choosing the most effective approach for a given spectral measurement problem.
Abstract

25/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015812314
WPI Acc No: 2003-874518/200381
Related WPI Acc No: 2004-155152
XRAM Acc No: C03-246762
XRPX Acc No: N03-698230
Semiconductor laser device for optical pick-up of optical **disk** drive, has reflector attached to side beam incident region of leading end portion of head
Patent Assignee: SHARP KK (SHAF)
Inventor: HONDA M; NOZAKI K; SHIOMOTO T; YOSHIDA T
Number of Countries: 002 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020041612	A1	20020411	US 2001971207	A	20011004	200381	B
JP 2002118320	A	20020419	JP 2000307462	A	20001006	200381	
JP 2002314185	A	20021025	JP 2001112770	A	20010411	200381	
JP 3710720	B2	20051026	JP 2001112770	A	20010411	200570	
US 6967979	B2	20051122	US 2001971207	A	20011004	200577	

Priority Applications (No Type Date): JP 2001112770 A 20010411; JP 2000307462 A 20001006
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020041612	A1		16	H01S-005/00	
JP 2002118320	A		9	H01S-005/022	
JP 2002314185	A		7	H01S-005/022	
JP 3710720	B2		9	H01S-005/022	Previous Publ. patent JP 2002314185
US 6967979	B2			H01S-005/00	

Abstract (Basic): US 20020041612 A1
Abstract (Basic):
NOVELTY - Reflector (7) is attached to a side beam incident region of a leading end portion (32) of a head (3). The reflector reflects the side beam R1' generated by first order beams which are reflected by an optical **disk** to feed back towards the head through an optical system.
DETAILED DESCRIPTION - The distance between a reflecting plane of the reflector and light emitting point at an outgoing end plane of the laser chip, is 50-150 micrometers. The reflector has saw-toothed configuration, and is formed of thermosetting resin and metal. The reflector is tilted at an angle of 10 degrees. The stem (2) of the laser device (1), includes a mount plane mounted with a semiconductor laser chip (4) and a cross plane facing a laser irradiated portion on which a laser beam emitted from the laser chip strikes. The cross plane is **covered** with a reflectance reducing material including a conductive die-bond paste that includes epoxy resin and silver. Also the reflectance reducing material which is applied to the mount plane, is used to **die**-bond the **laser** chip to the stem.
INDEPENDENT CLAIMS are also included for the following:
(a) Optical pick-up which includes a diffraction grating to diffract the laser beam emitter from the laser chip of the laser device. A beam splitter partially splits the diffracted laser beam. The intensity of the split laser beam is detected by a photodetector; and
(b) Semiconductor laser device fabrication method which involves attaching the reflector to the leading end plane of the head portion. The reflector is made of a **metal** that is **softer** than the

metal forming the header portion or synthetic resin.

USE - For optical pick-up of optical **disk** drive.

ADVANTAGE - Since the reflector is attached to the leading end plane of the header, the breakage of the inclined plane formation portion is prevented. Since the side beam is reflected outside the optical system, the properties of the optical pick-up, are not degraded. The amount of material used for the reflector is reduced. Mass production of the reflector is facilitated, hence the cost of the reflector is reduced. Since the reflectance reducing material scatters and/or absorbs the laser beam directed towards the cross plane, the amount of light reflected at the cross plane towards the optical **disk**, is reduced. Hence, the tracking error signal is not disturbed even if the tracking control is carried in the optical **disk** drive. Hence a highly reliable tracking error signal is obtained, even if a high output power semiconductor laser chip is used in the optical **disk** drive. By minimizing the area over which the reflectance reducing material is applied, the risk of applying the material over light emitting point at the end plane of the laser chip, is reduced.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of a semiconductor laser device.

Laser device (1)

Stem of laser device (2)

Head (3)

Semiconductor laser chip (4)

Reflector (7)

Leading end portion (32)

pp; 16 DwgNo 1/11

31/3,AB/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

08196362 INSPEC Abstract Number: A2002-07-4282-015, B2002-04-4140-004
Title: **Photosensitivity** in glasses: comparing ultrafast lasers with vacuum-ultraviolet lasers
Author(s): Herman, P.R.; Chen, K.P.; Ng, S.; Zhang, J.; Coric, D.; Corkum, P.; Mehendale, M.; Naumov, A.; Rayner, D.
Author Affiliation: Dept. of Electr. & Comput. English, Toronto University, Ont., Canada
Conference Title: Technical Digest. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Postconference Technical Digest (IEEE Cat. No.01CH37170) p.490-1
Publisher: Opt. Society America, Washington, DC, USA
Publication Date: 2001 Country of Publication: USA 604+72 post deadline papers pp.
ISBN: 1 55752 662 1 Material Identity Number: XX-2001-01869
Conference Title: CLEO 2001. Technical Digest. Summaries of papers presented at the Conference on Lasers and Electro-Optics. Postconference Technical Digest
Conference Sponsor: IEEE/Lasers & Electro-Opt. Society; OSA-Opt. Society America; Quantum Electron. Division of the Eur. Phys. Society; Opt. Society Japanese Quantum Electron. Joint Group
Conference Date: 6-11 May 2001 Conference Location: Baltimore, MD, USA
Language: English
Abstract: Summary form only given. Laser microfabrication technology is a promising photonics processing approach with parallels to the current use of lasers in semiconductor lithography, trimming, repair, and inspection. To this end, our groups are exploring two extreme forefronts of laser technology - ultrafast (UF) and deep-ultraviolet (UV) **lasers** - to **drive** strong interactions in transparent materials for shaping photonic structures. We recently provided head-to-head comparisons of F/sub 2/-laser and 1-ps UF-laser approaches in smooth **surface** microsculpting of optical glasses, and introduced a new UF-laser processing mode called burst machining that offers crack-free ablation. In this paper, we present an extension to more subtle laser-glass interactions that drive internal refractive-index changes. **Photosensitivity** processing rates, spatial resolution, and processing windows for both laser types are **discussed** together with the prospects for printing and trimming of optical waveguides and circuits.
Subfile: A B

31/3,AB/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

06709604 INSPEC Abstract Number: B9711-4270-017
Title: **Wafer** scale photonic-die attachment
Author(s): Ping Zhou; Boudreau, R.; Bowen, T.
Author Affiliation: AMP Inc., Harrisburg, PA, USA
Conference Title: 1997 Proceedings. 47th Electronic Components and Technology Conference (Cat. No.97CH36048) p.763-7
Publisher: IEEE, New York, NY, USA
Publication Date: 1997 Country of Publication: USA 1294 pp.
ISBN: 0 7803 3857 X Material Identity Number: XX97-01595
U.S. Copyright Clearance Center Code: 0 7803 3857 X/97/$4.00

Conference Title: 1997 Proceedings 47th Electronic Components and Technology Conference
Conference Sponsor: Components, Packaging, & Manufacture Technol. Society IEEE; Electron. Ind. Assoc
Conference Date: 18-21 May 1997 Conference Location: San Jose, CA, USA
Language: English
Abstract: A new low cost manufacturing system has been established for the attachment of photonic **dies** such as **lasers** and **photodetectors**. This system is **based** on **wafer** scale photonic-die bonding technology-WSPD, recently developed at AMP. WSPD technology combines the passive alignment of optical elements on a silicon or glass **wafer** board, and fluxless local soldering technology. The approach provides the capability of low cost, high volume (speed), high precision die attachment for hybrid integration of optoelectronic device **packaging**.
Subfile: B

? T S31/3,AB/6-12
>>>No matching display code(s) found in file(s): 65

31/3,AB/6 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

05911985 INSPEC Abstract Number: B9505-4270-003
Title: Passive fibre interfacing to optoelectronic devices using hybrid micropackaging
Author(s): Hall, J.P.; Kearley, M.Q.; Moseley, A.J.; Goodwin, M.J.; Rawsthorne, J.R.
Author Affiliation: GEC Marconi Mater., Towcester, UK
Conference Title: IEE Colloquium 'Planar Silicon Hybrid Optoelectronics' (Digest No.1994/198) p.2/1-6
Publisher: IEE, London, UK
Publication Date: 1994 Country of Publication: UK 86 pp.
Conference Title: IEE Colloquium 'Planar Silicon Hybrid Optoelectronics' (Digest No.1994/198)
Conference Sponsor: IEE
Conference Date: 24 Oct. 1994 Conference Location: London, UK
Language: English
Abstract: Low cost, passive alignment techniques are key to the widespread deployment of optoelectronic devices; assembly and **packaging** costs are currently dominated by the accurate positioning and fixing of the optical fibre in a critical alignment to the optoelectronic chip. GMMT Caswell are using microetched silicon components for chip carriers with V-grooves for passive fibre positioning and flip-chip solder bump technology for chip positioning and electrical interfacing. The extension of this technology from multimode fibre to the tighter tolerances required for monomode fibre is **discussed** below, for interfacing to **discrete** and array LEDs, detectors, lasers and optoelectronic integrated circuits (OEICs). The fabrication and performance of a compact hybrid transceiver multi-chip module for burst mode operation in optical backplane applications in avionics and datacomms is described. This unit employs a silicon **baseplate** to interface the laser (selected for wide operating temperature range) to a 50/125 mu m output fibre, attaining a coupling efficiency of approximately 20%, which is comparable to that achieved by active alignment. The input fibre is terminated in a 45 degrees mirror to direct light to the PIN detector mounted in a recess in the silicon **baseplate**. The module, measuring 15 mm by 25 mm and only 3 mm high, incorporates a **laser driver** integrated circuit and custom receiver chip for 500 Mbit/s operation over a

polymer waveguide backplane.
Subfile: B
Copyright 1995, IEE

31/3,AB/7 (Item 7 from file: 2)
DIALOG(R)File 2:INSPEC

04430853 INSPEC Abstract Number: A89100038, B89058002
Title: Performance of integrated source/detector combinations for smart skins incoherent optical frequency domain reflectometry (IOFDR) distributed fiber optic sensors
Author(s): Spillman, W.B., Jr.; Fuhr, P.L.; Anderson, B.L.
Author Affiliation: Aircraft Syst. Div., Hercules Aerosp. Co., Vergennes, VT, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering vol.986 p.106-18
Publication Date: 1989 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
Conference Title: Fiber Optic Smart Structures and Skins
Conference Sponsor: SPIE
Conference Date: 8-9 Sept. 1988 Conference Location: Boston, MA, USA
Language: English
Abstract: The success of the concept of smart skins depends upon the development of sensors that can be integrated into the vehicle skin and can provide accurate measurement of some parameter of interest. In particular, measurements of distributed parameter fields over the vehicle **surface** are of prime importance. Work to date has focused upon using a combination of optical fiber sensor and optical radar (OTDR and OFDR) techniques to provide distributed measurements of stress and strain. The results of an investigation into the use of integrated optical radar sources/detectors are presented. The work focused upon incoherent OFDR using a laser diode-PIN **photodetector** combination. The **laser** diode was **driven** with an RF 'chirp' with its output coupled into an optical fiber. Delayed optical signals returned from the fiber were fed back into the laser cavity and mixed. The integral **packaged photodetector** was used to provide system output. Such topics as laser coherence length and wavelength stability all influence this technique. Experimental results are presented and compared with measurements **based** on external **photodetection** and mixing. The applicability of the technique for smart skins applications is **discussed**.
Subfile: A B

31/3,AB/8 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

07616266
E.I. No: EIP05389368761
Title: Development of star-shaped four-channel CWDM optical-subassembly module
Author: Shih, Ying-Ching; Wu, Enboa
Corporate Source: Institute of Applied Mechanics College of Engineering National Taiwan University, Taipei 106, Taiwan
Conference Title: 55th Electronic Components and Technology Conference, ECTC
Conference Location: Lake Buena Vista, FL, United States
Conference Date: 20050531-20050604

E.I. Conference Number: 65596
Source: Proceedings - Electronic Components and Technology Conference 2005 Proceedings - 55th Electronic Components and Technology Conference, ECTC v 2 2005. (IEEE cat n CH37635)
Publication Year: 2005
CODEN: PECCA7 ISSN: 0569-5503
Language: English
Abstract: We developed an optical sub-assembly (OSA) module for a four-channel coarse wavelength division multiplexing (CWDM) transceiver that satisfied the size requirement for XENPAK, X2 and XPAK multi-source agreement (MSA). This module is composed of a frame structure with compact star-shaped optics paths, **die**-on-header **laser** or **photodetector**, thin film filters, ball lens and SC receptacle. The star-shaped optics design minimizes the reflective **surfaces** and makes the optics path shortest by using the concept of die-on-headers that are similar to To-can **packages**. The maximal optics path is 17.25mm from the laser diode to the fiber and the minimum is 12.00mm in the transmitter of optical subassembly (TOSA). In the receiver of optical subassembly (ROSA), the maximal optics path is 17.98mm from the fiber to **photodetector** and the minimum is 12.73mm. The designs of the **die**-on-header **laser** or **photodetector** and the frame structure provide both the passive and the active alignment versatilities. By the passive alignment method, we achieved the optimal optical condition for each channel in which the wavelengths varied from 1275nm to 1350nm. Furthermore, by using the active alignment method in the last stage of the assembly process, we compensated inaccuracies in the assembly process. As a result, the component assembly tolerance range of the OSA module increased up to 18-folds. Besides, the concept of hermetic sealing can also be executed in this design. From the analysis, it was found that the developed OSA module, no matter it is made of tool steel or optics plastic, shows good thermal stability for coupling efficiency when temperature changes from room temperature to -40 degree C and 85 degree C. copy 2005 IEEE. 9 Refs.

31/3,AB/9 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04946557
E.I. No: EIP97083775513
Title: Parallel interconnect for a novel system approach to short distance high information transfer data links
Author: Raskin, Glenn; Lebby, Michael S.; Carney, F.; Kazakia, M.; Schwartz, Daniel B.; Gaw, Craig A.
Corporate Source: Motorola Inc., Tempe, AZ, USA
Conference Title: High-Speed Semiconductor Lasers for Communication
Conference Location: San Jose, CA, USA Conference Date: 19970210-19970211
E.I. Conference Number: 23014
Source: Proceedings of SPIE - The International Society for Optical Engineering v 3038 1997. Society of Photo-Optical Instrumentation Engineers, Bellingham, WA, USA. p 165-174
Publication Year: 1997
CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-2449-8
Language: English
Abstract: The OPTOBUS**T**M family of products provides for high performance parallel interconnection utilizing optical links in a 10-bit wide bi-directional configuration. The link is architected to be 'transparent' in that it is totally asynchronous and dc coupled so that it

can be treated as a perfect cable with extremely low skew and no losses. An optical link consists of two identical transceiver modules and a pair of connectorized 62.5 micrometer multi mode fiber ribbon cables. The OPTOBUS**T**M I link provides bi- directional functionality at 4 Gbps (400 Mbps per channel), while the OPTOBUS**T**M II link will offer the same capability at 8 Gbps (800 Mbps per channel). The transparent structure of the OPTOBUS**T**M links allow for an arbitrary data stream regardless of its structure. Both the OPTOBUS**T**M I and OPTOBUS**T**M II transceiver modules are **packaged** as partially populated 14 by 14 pin grid arrays (PGA) with optical receptacles on one side of the module. The modules themselves are composed of several elements; including passives, integrated circuits optoelectronic devices and optical interface units (OIUs) (which consist of polymer waveguides and a specially designed lead frame). The initial offering of the modules electrical interface utilizes differential CML. The CML line driver sinks 5 mA of current into one of two pins. When terminated with 50 ohm pull-up resistors tied to a voltage between VCC and VCC-2, the result is a differential swing of plus or minus 250 mV, capable of driving standard PECL I/Os. Future offerings of the OPTOBUS**T**M links will incorporate LVDS and PECL interfaces as well as CML. The integrated circuits are silicon **based**. For OPTOBUS**T**M I links, a 1.5 micrometer drawn emitter NPN bipolar process is used for the receiver and an enhanced 0.8 micrometer CMOS process for the **laser driver**. For OPTOBUS**T**M II links, a 0.8 micrometer drawn emitter NPN bipolar process is used for the receiver and the driver IC utilizes 0.8 micrometer BiCMOS technology. The OPTOBUS**T**M architecture uses AlGaAs vertical cavity **surface** emitting lasers (VCSELs) at 850 nm in conjunction with unique opto-electronic **packaging** concepts. Most laser **based** transmitter subsystems are incapable of carrying an arbitrary NRZ data stream at high data rates. The receiver subsystem utilizes a conventional GaAs PIN **photo-detector**. In parallel interconnect systems the design must take into account the simultaneous switching noise from the neighboring systems. If not well controlled, the high density of the multiple interconnects can limit the sensitivity and therefore the performance of the system. 3 Refs.

31/3,AB/10 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04792655
E.I. No: EIP97083790010
Title: **Wafer** scale photonic-die attachment
Author: Zhou, Ping; Boudreau, Robert; Bowen, Terry
Corporate Source: AMP Inc, Harrisburg, PA, USA
Conference Title: Proceedings of the 1997 47th IEEE Electronic Components & Technology Conference
Conference Location: San Jose, CA, USA Conference Date: 19970518-19970521
E.I. Conference Number: 46865
Source: Proceedings - Electronic Components and Technology Conference 1997. IEEE, Piscataway, NJ, USA,97CB36048. p 763-767
Publication Year: 1997
CODEN: PECCA7 ISSN: 0569-5503
Language: English
Abstract: A new low cost manufacture system has been established for the attachment of photonic **dies** such as **lasers** and **photo detectors**. This system is **based** on **wafer** scale photonic-die bonding technology-WSPD, recently developed at AMP. WSPD technology combines the passive alignment of optical elements on a silicon

or glass **wafer** board, and fluxless local soldering technology. The approach provides the capability of low cost, high volume (speed), high precision die attachment for hybrid integration of optoelectronic device **packaging**. (Author abstract) 7 Refs.

31/3,AB/11 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

15350906 PASCAL Number: 02-0037888
High-bandwidth multi-channel optoelectronic interconnects for parallel data and image transmission and processing
Optoelectronic interconnects VIII : San Jose CA, 25-26 January 2001
JIANG LIU J; KALAYJIAN Zaven; RIELY Brian; GOLLSNEIDER Brian; LAWLER William; CHANG Wayne; SHEN Paul H; TAYSING-LARA Monica; NEWMAN Peter G; SIMONIS George J
SUNING TANG, ed; YAO LI, ed
U.S. Army Research Laboratory, Sensors and Electron Devices Directorate, AMSRL-SE-EM, 2800, Powder Mill Road, Adelphi, MD 20783, United States
International Society for Optical Engineering, Bellingham WA, United States
Optoelectronic interconnects. Conference, 8 (San Jose CA USA) 2001-01-25
Journal: SPIE proceedings series, 2001, 4292 52-61
Language: English
A high-bandwidth, free-space integrated optoelectronic interconnect system was built for high-density, parallel data transmission and processing. **Substrate**-emitting 980 nm vertical-cavity **surface**-emitting laser (VCSEL) arrays and **photodetector** arrays, both driven by complimentary metal-oxide-semiconductor (CMOS) circuitry, were employed as a transmitter and receiver. We designed, fabricated, hybridized, and **packaged** the VCSEL transmitter and photoreceiver arrays. Data rates above 1 Gbs for each channel on the VCSEL/CMOS emitter and 500 MHz for each channel on photoreceiver were measured, respectively. We integrated the optical interconnects using free-space optical alignment and demonstrated serial and parallel transmissions of digital data and video images.

31/3,AB/12 (Item 1 from file: 315)
DIALOG(R)File 315:ChemEng & Biotec Abs

473616 CEABA Accession Number: 32-03-000517 DOCUMENT TYPE: Journal
Title: Organic materials in optoelectronics
Orig. Title: Organische Werkstoffe fuer die Optoelektronik
AUTHOR: Zenz, C. ; Ambrosch-Draxl, C. ; Leising, G.
CORPORATE SOURCE: Universitaet Graz, Graz, A
JOURNAL: Phys. Unserer Zeit, Volume: 31, Issue: 5, Page(s): 209-214
CODEN: PHUZAH ISSN: 00319252
PUBLICATION DATE: 2000 (20000000) LANGUAGE: German
ABSTRACT: Due to their electronic (semiconductor) properties, organic solids can be used as active materials in organic light emitting devices (OLED) **covering** the whole range of visible light, **photo detectors**, solar cells, and field effect transistors. Due to improved chemical synthesis and understanding of photophysics, organic semiconductors ('synthetic metals') have become an interesting alternative to inorganic ones. Organic solids are advantageous due to the combination of semiconductor properties with organic dye properties, and the potential of optimum adaption to the respective utilisation due to

the multiple materials and combinations such as molecules, molecule crystals, oligomers, and polymers. Ultrathin layers can be producecd by vapour deposition, spin coating, doctor's blade technique, or even by use of ink jet printers. Basic principles of electron structure and the material design of two typical organic materials (para-hexaphenyl conjugated oligomer and methyl-substituted conducting polyparaphenylen m-LPPP as a conjugated soluble conducting polymer) are described. Details are given for the production of high molecular weight films of highest optical quality by spin coating with a layer thickness up to 100 nm and a **surface** roughness below 5 nm, and of a single-layer OLED with an active electroluminescent layer of 100 nm, of OLED colour displays with easier technology than that for inorganic LEDs in spite of the necessity of multi-layer systems, and of an m-LPPP polymer laser with first promising experiments. The next step will be an electrically instead of optically pumped organic laser diode, but the electrode contact is a big problem. Other future applications include photovoltaics, optical switches for optical computers, and further drastically improved carrier conduction (reported already for anthracen).

34/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

017151800
WPI Acc No: 2005-476145/200548
XRAM Acc No: C05-145126
XRPX Acc No: N05-387403
Laser package as part of laser transmitter, receiver or transceiver comprises soft metal between laser die and lid and **conducting heat** between laser die and lid
Patent Assignee: MCCOLLOCH L R (MCCO-I)
Inventor: MCCOLLOCH L R
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20050129074	A1	20050616	US 2003732994	A	20031210	200548	B

Priority Applications (No Type Date): US 2003732994 A 20031210
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20050129074	A1		7	H01S-003/04	

Abstract (Basic): US 20050129074 A1
Abstract (Basic):
NOVELTY - Laser package comprises a submount (18); a laser die (12) mounted on a first surface of the submount; a lid (24) mounted on the first surface of the submount over the laser die; and a soft metal (30) disposed between the laser die and the lid. The soft metal **conducts heat** between the laser die and the lid and **cold flows** faster than the laser die and the lid can thermally cycle.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for forming a laser package comprising: mounting a laser die on a first surface of a submount; placing a soft metal on the lid; and mounting the lid on the submount.
USE - As part of laser transmitter, receiver or transceiver.
ADVANTAGE - The soft metal is able to **creep** or **cold flow** under pressure to accommodate for varying manufacturing tolerances and varying thermal expansion rates of the components in the laser package.
DESCRIPTION OF DRAWING(S) - The figure shows a side view of a laser package.
Laser die (12)
Photodetector die (14)
Laser driver die (16)
Submount (18)
Solder balls (20)
Interconnects (22)
Lid (24)
Alignment pins (26)
Lens (28)
Soft metal (30,36,42)
Metal pads (32,34,38,40,44,46)
pp; 7 DwgNo 2/7

34/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012589421
WPI Acc No: 1999-395528/199933
XRPX Acc No: N99-295628
Thermally improved slab laser pump cavity apparatus with integral concentrator
Patent Assignee: RAYTHEON CO (RAYT)
Inventor: BYREN R W
Number of Countries: 021 Number of Patents: 008
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9933149	A1	19990701	WO 98US26002	A	19981208	199933	B
AU 9917163	A	19990712	AU 9917163	A	19981208	199950	
EP 974177	A1	20000126	EP 98961984	A	19981208	200010	
			WO 98US26002	A	19981208		
US 6014391	A	20000111	US 97994422	A	19971219	200010	
AU 730093	B	20010222	AU 9917163	A	19981208	200115	
EP 974177	B1	20020306	EP 98961984	A	19981208	200219	
			WO 98US26002	A	19981208		
DE 69804084	E	20020411	DE 604084	A	19981208	200232	
			EP 98961984	A	19981208		
			WO 98US26002	A	19981208		
IL 130740	A	20021110	IL 130740	A	19981208	200282	

Priority Applications (No Type Date): US 97994422 A 19971219
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9933149	A1	E	22	H01S-003/06	
Designated States (National): AU IL					
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
AU 9917163	A			H01S-003/06	Based on patent WO 9933149
EP 974177	A1	E		H01S-003/06	Based on patent WO 9933149
Designated States (Regional): DE FR GB					
US 6014391	A			H01S-003/04	
AU 730093	B			H01S-003/06	Previous Publ. patent AU 9917163 Based on patent WO 9933149
EP 974177	B1	E		H01S-003/06	Based on patent WO 9933149
Designated States (Regional): DE FR GB					
DE 69804084	E			H01S-003/06	Based on patent EP 974177 Based on patent WO 9933149
IL 130740	A			H01S-003/04	Based on patent WO 9933149

Abstract (Basic): WO 9933149 A1
Abstract (Basic):
NOVELTY - Absorbing regions (16) at the edges of an active region (4) are preferably diffusion bonded to the active region in a cladding region (3) and contain the same crystal host material as the active region but are doped with ions so that they absorb energy at the pump wavelength and release energy in the form of heat. The absorbing regions produce a uniform heat flow together with **cold** plates, while a thermal interface (7) has a variable thickness.
USE - The laser cavity is used for solid state slab lasers.
ADVANTAGE - Providing efficient heat transfer with uniform temperature gradient across active lasing region.
DESCRIPTION OF DRAWING(S) - The drawing is an illustration of laser pump cavity apparatus with absorbing regions at the slab edges.
Absorbing regions (16)
Active region (4)
Cladding region (3)

Thermal interface (7)
pp; 22 DwgNo 2/5

36/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004173040
WPI Acc No: 1984-318579/198451
XRPX Acc No: N84-237656
Annular laser window cooling appts. - uses compliant metal wires to maintain good thermal contact between inner circumference of window and cooling cylinder
Patent Assignee: LASER MFG TECHN INC (LASE-N)
Inventor: REAM S L
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4486886	A	19841204	US 82427975	A	19820929	198451	B

Priority Applications (No Type Date): US 82427975 A 19820929
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4486886	A		4		

Abstract (Basic): US 4486886 A

An annular region of material is transparent to laser radiation, and has its outer circumference cooled. A cylindrical device, **conductive** to **heat**, fits in the centre of the region, making thermal contact with the inner window circumference. The device has a number of openings in a first side providing effective heat exchange, obscuring none of the transparent annular region and extending in part into the region on the first side of the window external to said laser.

The device is maintained in thermal contact with the inner window circumference by a **soft**, compliant **metal** wires placed between the device and the circumference. Compression on the compliant metal wires is maintained by a portion extending in part into the region on the opposite second side of the window internal to the laser.

ADVANTAGE - Does not interrupt laser beam and increases laser power.

0/1

39/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016578229
WPI Acc No: 2004-736966/200472
XRAM Acc No: C04-259112
XRPX Acc No: N04-583216
Light-emitting apparatus package for e.g. liquid crystal display, comprises ceramic substrate having first and second concave sections, wiring pattern in the concave section(s), and **metallized layer** on inside-concave section surface
Patent Assignee: SHARP KK (SHAF)
Inventor: INOGUCHI T
Number of Countries: 003 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20040208210	A1	20041021	US 2004816736	A	20040401	200472	B
JP 2004311467	A	20041104	JP 200398554	A	20030401	200472	
JP 2004311791	A	20041104	JP 2003104669	A	20030408	200472	
CN 1534355	A	20041006	CN 200432609	A	20040401	200506	

Priority Applications (No Type Date): JP 2003104669 A 20030408; JP 200398554 A 20030401
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20040208210	A1		56	H01S-003/04	
JP 2004311467	A		18	H01L-033/00	
JP 2004311791	A		21	H01L-033/00	
CN 1534355	A			G02F-001/1335	

Abstract (Basic): US 20040208210 A1
Abstract (Basic):

NOVELTY - A light-emitting apparatus package comprises a ceramic substrate having a first concave section for providing light exit aperture and a second concave section for providing area for mounting light-emitting device; wiring pattern in the concave section(s); and **metallized layer** having light-reflective property, which is provided on an inside-concave section surface of the substrate and is electrically insulated from wiring pattern.

DETAILED DESCRIPTION - A light-emitting apparatus package comprises:

(A) a ceramic substrate having an electric insulating property and a good **heat conductivity**;

(B) first concave section (10e) recessed in a thickness direction of the ceramic substrate, and providing a light exit aperture on the substrate first surface;

(C) second concave section (10d), provided in the first concave section, and further recessed in the thickness direction of the ceramic substrate, for providing an area for mounting a light-emitting device (3, 8, 9);

(D) wiring pattern (11a) provided in the first concave section and/or the second concave section, for supplying electricity to the light emitting device; and

(E) **metallized layer** (12), provided on an inside-concave section surface of the ceramic substrate in a manner that the area for mounting the light-emitting device is sandwiched between the **metallized layer** and the light exit aperture, and in a manner that the **metallized layer** is electrically

insulated from the wiring pattern, with the **metallized layer** having a light reflective property.

INDEPENDENT CLAIMS are also included for:

(A) a light-emitting apparatus comprising a light-emitting apparatus package, light-emitting device having an electrode on that part of the inside-concave-section surface in which no light-emitting device is provided, wire for electrically connecting wiring pattern and the electrode, and transparent resin section for sealing the light-emitting device and the wire, and having light transmitting property;

(B) a backlight apparatus comprising light-emitting apparatus, and a light guide plate whose light-receiving end face faces a light-emitting surface, propagating a light received on the light-receiving end face and then emitting light from a surface; where the light-emitting apparatus includes light-emitting devices which emit light when electricity is supplied, light-emitting device substrate having at least one of the light-emitting devices provided on a surface of the light-emitting device substrate, and a heat-discharging member which is bonded to any one of a second surface and third surfaces of the light emitting device substrate; and

(C) display apparatus comprising a display panel having a pair of substrates, which sandwich a displaying medium, and displaying by applying a display voltage between the substrates; and backlight apparatus provided on the display panel second surface.

USE - For light-emitting apparatus, backlight apparatus, and display apparatus (claimed) such as liquid crystal display.

ADVANTAGE - The light-emitting apparatus package can excellently discharge heat, and efficiently utilize light. It improves the luminosity, stability, radiation property of the light-emitting device. The size of the light-emitting apparatus can be smaller, and it is possible to secure the connections carried out by the connecting members to become firm.

DESCRIPTION OF DRAWING(S) - The figure is a perspective view of a light-emitting apparatus.

Light-emitting devices (3, 8, 9)
Second concave section (10d)
First concave section (10e)
Wiring pattern (11a)
Metallized layer (12)
pp; 56 DwgNo 1/69

39/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016521249
WPI Acc No: 2004-679635/200467
XRAM Acc No: C04-242269
XRPX Acc No: N04-538693

Submount for flip-chip bonding to semiconductor laser diode for semiconductor laser diode assembly, comprises first and second solder layers that are formed to same thickness on first and second **metal layers**, respectively

Patent Assignee: SAMSUNG ELECTRONICS CO LTD (SMSU)
Inventor: CHAE S; KWAK J; SUNG Y; CHAE S H; KWAK J S; SUNG Y J
Number of Countries: 035 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1458036	A1	20040915	EP 2003257874	A	20031215	200467	B

JP 2004274057 A 20040930 JP 200462190 A 20040305 200467
CN 1527448 A 20040908 CN 20031120206 A 20031209 200478
US 20050002428 A1 20050106 US 2003732241 A 20031211 200504
KR 2004079635 A 20040916 KR 200314613 A 20030308 200508
EP 1458036 B1 20051123 EP 2003257874 A 20031215 200577

Priority Applications (No Type Date): KR 200314613 A 20030308
Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
EP 1458036 A1 E 15 H01L-033/00
Designated States (Regional): AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR
JP 2004274057 A 13 H01S-005/022
CN 1527448 A H01S-005/022
US 20050002428 A1 H01S-003/04
KR 2004079635 A H01S-005/20
EP 1458036 B1 E H01L-033/00
Designated States (Regional): DE FR GB

Abstract (Basic): EP 1458036 A1
Abstract (Basic):
NOVELTY - A submount (200) comprises first and second solder layers (231, 232) that are formed to the same thickness on first and second **metal layers** (221, 222), respectively and are bonded to first and second electrodes, respectively.
DETAILED DESCRIPTION - A submount for flip-chip bonding to a semiconductor laser diode chip (100) with stepped first and second electrodes comprises a substrate (110, 210) having first and second surfaces (211, 212) that are separated by a step height corresponding to a height difference between the first and second electrodes; first and second **metal layers** that are formed to the same thickness on the first and second surfaces, respectively; and first and second solder layers that are formed to the same thickness on the first and second **metal layers**, respectively and are bonded to the first and second electrodes, respectively.
An INDEPENDENT CLAIM is also included for a method of manufacturing a submount comprising etching a substrate to form first and second **surfaces**; depositing a **metal** on the first and second surfaces to form first and second **metal layers**; and depositing a solder on the first and second **metal layers** to form first and second solder layers.
USE - For flip-chip bonding to a semiconductor laser diode for semiconductor laser diode assembly (claimed).
ADVANTAGE - The submount has improved heat discharge efficiency, thus enhancing the light emitting characteristics of the semiconductor laser diode chip.
DESCRIPTION OF DRAWING(S) - The figure is a sectional view of a semiconductor laser diode assembly.
Diode chip (100)
Substrate (110, 210)
Submount (200)
First and second surfaces (211, 212)
First and second **metal layers** (221, 222)
First and second solder layers (231, 232)
pp; 15 DwgNo 4/7

39/3,AB/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014719488
WPI Acc No: 2002-540192/200258
XRAM Acc No: C02-153236
XRPX Acc No: N02-427775
Localized heating reducing-device for, e.g. electro-absorption modulator, includes contact layer with **electrically** and **thermally** conductive first region, and **thermally** and non-**electrically** conductive second region
Patent Assignee: NORTEL NETWORKS LTD (NELE); BOOKHAM TECHNOLOGY PLC (BOOK-N)
Inventor: BOUDREAU M; FOSTER R; MOORE R S; PROSYK K
Number of Countries: 028 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1205785	A2	20020515	EP 2001309541	A	20011112	200258	B
CA 2361683	A1	20020513	CA 2361683	A	20011109	200258	
US 6654534	B1	20031125	US 2000709646	A	20001113	200378	
EP 1205785	B1	20050112	EP 2001309541	A	20011112	200505	
DE 60108336	E	20050217	DE 108336	A	20011112	200514	
			EP 2001309541	A	20011112		

Priority Applications (No Type Date): US 2000709646 A 20001113
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1205785	A2	E	13	G02F-001/035	
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
CA 2361683	A1	E		G02B-006/10	
US 6654534	B1			G02B-006/10	
EP 1205785	B1	E		G02F-001/035	
Designated States (Regional): DE FR GB					
DE 60108336	E			G02F-001/035	Based on patent EP 1205785

Abstract (Basic): EP 1205785 A2
Abstract (Basic):
NOVELTY - A localized heating reducing-device has an electrode for applying an electrical bias across the optical waveguide, and a contact layer for providing an interface between the electrode and optical wavelength. The contact layer has an **electrically** and **thermally** conductive first region, and a **thermally** and non-**electrically** conductive second region for dissipating heat in a localized heating region.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) A method for reducing localized heating in a device for controlling the passing light; and

(2) A method of manufacturing the inventive device comprising adding a contact layer of **electrically** conducting and **thermally** conducting material to a surface of a waveguide, masking the contact layer, etching away the electrically conducting material in an exposed region of the contact layer, adding a blanket deposit of an **electrically** insulating and **thermally** conducting material to the first region and the etched away second region of the contact layer, masking the second region and leaving exposed at least a part of the first region, etching the **electrically** insulating and **thermally** conducting material in the exposed part of the first **region**, and depositing **metal** into the contact layer to form the electrode.

USE - For reducing localized heating in an optical waveguide (102) useful in an electro-absorption modulator, a Mach-Zehnder modulator, a

laser, a photo-detector, or a semiconductor optical amplifier (claimed).

ADVANTAGE - The invention prevents overheating in a region near the point of optical entry and prevents undesirable electrical contact between electrode and the region. It permits greater optical power to be delivered to the device. A higher reverse bias voltage can be used to modulate the light signal, thus permitting increased speed of the device.

DESCRIPTION OF DRAWING(S) - The figure shows a section view of an optical modulator.

Optical waveguide (102)

Contact layer (110)

Electrode (112)

pp; 13 DwgNo 1/17

39/3,AB/4 (Item 4 from file: 350)

014530081

WPI Acc No: 2002-350784/200238

Related WPI Acc No: 2004-650720

XRAM Acc No: C02-099598

XRPX Acc No: N02-275597

Semiconductor laser element for use as light source for exciting solid laser, includes concave portion filled with metal having **heat conductivity** higher than that of substrate

Patent Assignee: FUJI PHOTO FILM CO LTD (FUJF); FUKUNAGA T (FUKU-I); HAYAKAWA T (HAYA-I); KUNIYASU T (KUNI-I)

Inventor: FUKUNAGA T; HAYAKAWA T; KUNIYASU T

Number of Countries: 002 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020018499	A1	20020214	US 2001826851	A	20010406	200238	B
JP 2002009382	A	20020111	JP 2001108085	A	20010406	200238	
JP 2002158393	A	20020531	JP 200145118	A	20010221	200239	
US 6738403	B2	20040518	US 2001826851	A	20010406	200433	

Priority Applications (No Type Date): JP 2000274774 A 20000911; JP 2000104902 A 20000406; JP 2000114614 A 20000417

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020018499	A1		38	H01S-003/04	
JP 2002009382	A		10	H01S-005/024	
JP 2002158393	A		8	H01S-005/024	
US 6738403	B2			H01S-005/00	

Abstract (Basic): US 20020018499 A1

Abstract (Basic):

NOVELTY - A semiconductor laser element comprises a substrate (1), semiconductor layers formed on the substrate, and a concave portion (1a) formed on one surface of the substrate. One surface is opposite to the other surface having the semiconductor layers. The concave portion is filled with a metal having a **heat conductivity** higher than the substrate.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a semiconductor laser comprising a semiconductor laser element, a heat sink (17), a cooling medium passageway, and a mechanism for causing a cooling medium to flow through the cooling medium passageway.

USE - For use as a light source for exciting a solid laser (claimed) in high-speed processing and communication for information or image, instrumentation, medical treatment, and printing.

ADVANTAGE - The inventive semiconductor laser element can emit a beam of high quality and high reliability having Gauss-type distribution from a low output to a high output.

DESCRIPTION OF DRAWING(S) - The figure is a view of the inventive semiconductor laser element.

Substrate (1)
Concave portion (1a)
Contact layer (4, 10)
Active layer (7)
Electrodes (12, 14)
Heatsink (17)
pp; 38 DwgNo 1/32

39/3,AB/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009588771
WPI Acc No: 1993-282317/199336
XRPX Acc No: N93-216925

Window for Carbon Dioxide power laser - Has partially transmitting unlined diamond window of controlled thickness mounted in cooled annular heat sink.

Patent Assignee: AIR LIQUIDE SA (AIRL); AIR LIQUIDE (AIRL)
Inventor: GUERIN D; LARQUET C; MARIE B
Number of Countries: 013 Number of Patents: 009
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 559501	A1	19930908	EP 93400157	A	19930122	199336	B
FR 2688098	A1	19930903	FR 922437	A	19920302	199346	
CA 2090656	A	19930903	CA 2090656	A	19930301	199347	
JP 6005951	A	19940114	JP 9336640	A	19930225	199407	
US 5335245	A	19940802	US 9318722	A	19930217	199430	
IL 104729	A	19950629	IL 104729	A	19930215	199538	
EP 559501	B1	19951227	EP 93400157	A	19930122	199605	
DE 69301112	E	19960208	DE 601112	A	19930122	199611	
			EP 93400157	A	19930122		
ES 2081690	T3	19960316	EP 93400157	A	19930122	199618	

Priority Applications (No Type Date): FR 922437 A 19920302
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 559501	A1	F	5	H01S-003/034	
Designated States (Regional): BE CH DE ES FR GB IT LI NL					
CA 2090656	A	F		H01S-003/02	
US 5335245	A		4	H01S-003/08	
EP 559501	B1	F	5	H01S-003/034	
Designated States (Regional): BE CH DE ES FR GB IT LI NL					
DE 69301112	E			H01S-003/034	Based on patent EP 559501
ES 2081690	T3			H01S-003/034	Based on patent EP 559501
FR 2688098	A1			H01S-003/034	
JP 6005951	A			H01S-003/03	
IL 104729	A			H01S-003/034	

Abstract (Basic): EP 559501 A

The partially absorbing window (3) is mounted in a tubular section

optical cavity. The window is mounted in a cooled tubular section (9). The tubular section has a good thermal conductivity and has a circular outer cooling element (11).

The window is made up of thin diamond sheet (5A,5B) of thickness not greater than 0.2 microns, held in place by a threaded ring section (7), with the two diamond layers separated by a calibrated ring section (14). The diamond windows are not covered. The output laser power absorbs radiation and retransmit the radiation by conduction through the window, excess heat being dissipated in the outer cooling section.

USE/ADVANTAGE- Eg for measuring atmospheric pollution. Provides simple and robust high power window with long life.

Dwg.1/2

Abstract (Equivalent): EP 559501 B

High-energy gas laser comprising an optical cavity (2) delimited, at its opposite ends, by a first, partially transmitting, window (3), and a second, reflective, window (4), characterised in that the first window (3) consists of at least one diamond plate (5) with uncoated parallel plane faces, having a controlled thickness greater than 150 microns and less than 7 mm and whose variations do not exceed 0.2 microns.

Dwg.1

Abstract (Equivalent): US 5335245 A

The power laser has a cavity (2) delimited at its opposite ends by a first partially transmitting window (3) and a second reflecting window (4). The first window (3) is constituted by at least one diamond wafer (5) with uncoated flat parallel surfaces, having a controlled thickness whose variations do not exceed 0.2 micron. The diamond wafer (5,6) is mounted in an annular support (9,10) of material which is a good **heat conductor** and is provided with a cooler (11,12).

The window (3) can comprise two parallel wafers of diamond separated by a calibrated distance which is an uneven multiple of lambda/4n, lambda being the laser wavelength and n the index of refraction of the medium between the wafers. Or the second window (4) can also be constituted by a diamond wafer (6) with a reflective **metallic coating** (60). A sweeping gas can be blown over the internal surface of at least one of the windows.

USE/ADVANTAGE - E.g. CO2 laser, waveguide laser, esp. whispering gallery laser. Strong construction, increased lifetime, high flexibility of determining coeffts. of reflection and/or transmission.

Dwg.1/2

39/3,AB/6 (Item 6 from file: 350)

008978976

WPI Acc No: 1992-106245/199214

XRPX Acc No: N92-079629

Laser diode module with electronic cooling element - has thermistor assembly mounted on diode carrier in position adjacent diode chip

Patent Assignee: FUJITSU LTD (FUIT)

Inventor: ISHIZAKA T; MASUKO T; SATOH S

Number of Countries: 007 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 477841	A	19920401	EP 91116209	A	19910924	199214	B
JP 4132286	A	19920506	JP 90251829	A	19900925	199226	
US 5214660	A	19930525	US 91763703	A	19910923	199322	
EP 477841	A3	19920617	EP 91116209	A	19910924	199333	

EP 477841	B1	19960131	EP 91116209	A	19910924	199609
DE 69116783	E	19960314	DE 616783	A	19910924	199616
			EP 91116209	A	19910924	

Priority Applications (No Type Date): JP 90251829 A 19900925
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 477841	A		16		
Designated States (Regional): DE FR GB IT NL					
JP 4132286	A		12	H01S-003/18	
US 5214660	A		15	H01S-003/04	
EP 477841	B1	E	18	H01S-003/043	
Designated States (Regional): DE FR GB IT NL					
DE 69116783	E			H01S-003/043	Based on patent EP 477841

Abstract (Basic): EP 477841 A

An electronic cooling element is in contact with carrier supporting a laser diode chip. A thermistor assembly is provided on the carrier adjacent the diode. The thermistor assembly includes a base of good thermal conductivity, pref. metal, esp. Cu with a plated Au layer between Cu and thermistor. The electronic cooling element is pref. a Peltier element.

A relay block for the thermistor assembly (12) is also provided for wire bonding the thermistor (6) and an external circuit, the relay block (96) pref. being an insulator of good thermal conductivity provided with a **metallic film** pref. a BeO block (96) coated with an Au film (98).

ADVANTAGE - Faulty thermistor can easily be replaced without disturbing rest of module, pref. by using a low temp. braze to attach the thermistor assembly.

Dwg.8/14

Abstract (Equivalent): EP 477841 B

A laser diode module comprising: an electronic cooling element (8); a carrier (4) provided in contact with said electronic cooling element; a laser diode chip (2) provided on said carrier; and a thermistor assembly provided on said carrier in the vicinity of said laser diode; wherein said thermistor assembly is formed of a thermistor (6) fixedly attached by means of a first brazing material to a base (10) having good **heat conductivity;** the laser diode chip is attached to the carrier by means of a second brazing material; the thermistor assembly is attached to the carrier by means of a third brazing material; characterised in that the melting point of the third brazing material is lower than the melting points of the first and second brazing materials.

Dwg.1/14

Abstract (Equivalent): US 5214660 A

The laser diode module comprises an electronic cooling element and a carrier in contact with it. A laser diode chip is attached on the carrier. A thermistor assembly is attached on the carrier in the vicinity of the laser diode. The thermistor assembly comprises a thermistor fixedly attached onto a base having good **heat conductivity.**

The thermistor and base have a first material between them, the laser diode chip and carrier having a second material. The thermistor assembly and carrier have a third material between, the melting point of which is lower than the melting points of the first and second materials. Pref. the cooling element is a Peltier element.

USE - Laser diode (LD) module in which highly accurate temp. control of the chip is possible.

Dwg.3/14

39/3,AB/7 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008511344
WPI Acc No: 1991-015428/199103
XRAM Acc No: C91-006671
XRPX Acc No: N91-011873
Corrosion resistant cooling device esp. for excimer laser - comprises low melting **metallic layer** between corrosion resistant **metallic layers**
Patent Assignee: LAMBDA PHYSIK FORSC (LAMB-N)
Inventor: BASTING D; VOSS F
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 3920138	A	19910110	DE 3920133	A	19890620	199103	B

Priority Applications (No Type Date): DE 3920138 A 19890620; DE 3920133 A 19890620

Abstract (Basic): DE 3920138 A
(A) A corrosion-protected cooling device, for **heat transfer** from a working fluid to a cooling fluid, includes the following three layers in large area thermal contact: (i) a first layer (1) in direct contact with the cooling fluid and consisting of a metal or alloy with good thermal conductivity and high long term corrosion resistance to the cooling fluid; (ii) a second layer (2) in direct contact with the working fluid and consisting of a metal or alloy with good thermal conductivity and high long term corrosion resistance to the working fluid; and (iii) an intermediate **layer** (3) of **metal** alloy which is out of direct contact with both fluids and which has a melting pt. of below 300 deg.C. (B) Prodn. of the cooling device involves introducing the intermediate **layer metal** or alloy in the molten condition into the space between the first and second layers.
USE/ADVANTAGE - Claimed use of the cooling device is in a laser, esp. in an excimer laser with the second layer contacting the excimer laser gas medium and the first layer contacting tapewater. The cooling device has high overall thermal conductivity, is inexpensive and has long service life. (6pp Dwg.No.2/2

39/3,AB/8 (Item 8 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004701143
WPI Acc No: 1986-204485/198631
Related WPI Acc No: 1986-169317
XRPX Acc No: N86-152771
Conduction cooled optically pumped solid state laser - has rod and pump lamp covered with reflective and conductive layer backed by conductive fluid being in contact with layer and heat sink
Patent Assignee: GTE GOVERNMENT SYSTEMS CORP (SYLV)
Inventor: GUCH S
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4601038	A	19860715	US 85695764	A	19850128	198631	B

Priority Applications (No Type Date): US 85775088 A 19850912; US 81319838 A 19811109; US 83555750 A 19831128; US 85695764 A 19850128

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4601038	A		6		

Abstract (Basic): US 4601038 A

The exterior surfaces of a laser rod and pump lamp are covered with a highly reflective metal foil to prevent light leakage from the rod and lamp. The laser rod and pump lamp operate within a cavity inside a heat sink. Between the metal foil and the housing is a thermally conductive fluidic material selected to provide a tailored thermal impedance between the heat sink and the rod and pump to optimise the steady state temperatures of these components.

The conductive fluid is not circulated but is contained to act as a simple **heat conductor**. The optically reflective and the **heat transfer** functions of the laser pumping operation are essentially separate from each other. The conductive **layer** comprises a **metallic** foil (pref. aluminium) and the fluidic material is a gas (e.g. air) or a liquid (water, liquid mercury).

ADVANTAGE - Highly efficient in both optical pumping and in heat removal. Thermal impedance between heat sources and sink is variable without affecting lamp-laser rod coupling. Cooling medium is isolated from damaging light radiation of pump and rod

39/3,AB/9 (Item 9 from file: 350)

001227860

WPI Acc No: 1975-B1636W/197505

Semiconductor laser with Peltier element heat sink - has Peltier elements between semiconductor body and heat sink block

Patent Assignee: LICENTIA PATENT-VERW GMBH (LICN)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 2333119	A	19750123				197505	B

Priority Applications (No Type Date): DE 2333119 A 19730629

Abstract (Basic): DE 2333119 A

The Peltier elements are electrically series connected, but thermally parallel connected, and are combined into one or several Peltier cells. The Peltier cells may be series connected electrically to the semiconductor laser crystal and the operating current of the semiconductor laser may flow through the same. The Peltier elements may consists of n- and p- bismuth telluride.

The elements may be covered by electrically insulating but thermally conductive layers with an input Peltier element laid bair on the upper side of the heat sink and an output Peltier element on the heat sink underside. These elements may serve for contacting metal support surface or a metal heat sink proper.

42/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

My Application

017151800
WPI Acc No: 2005-476145/200548
XRAM Acc No: C05-145126
XRPX Acc No: N05-387403
Laser package as part of laser transmitter, receiver or transceiver comprises **soft metal** between **laser die** and lid and conducting heat between **laser die** and lid
Patent Assignee: MCCOLLOCH L R (MCCO-I)
Inventor: MCCOLLOCH L R
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20050129074	A1	20050616	US 2003732994	A	20031210	200548	B

Priority Applications (No Type Date): US 2003732994 A 20031210
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20050129074	A1		7	H01S-003/04	

Abstract (Basic): US 20050129074 A1 USPGPub
Abstract (Basic):
NOVELTY - Laser package comprises a submount (18); a **laser die** (12) mounted on a first surface of the submount; a lid (24) mounted on the first surface of the submount over the **laser die**; and a **soft metal** (30) disposed between the **laser die** and the lid. The **soft metal** conducts heat between the **laser die** and the lid and cold flows faster than the **laser die** and the lid can thermally cycle.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for forming a laser package comprising: mounting a **laser die** on a first surface of a submount; placing a **soft metal** on the lid; and mounting the lid on the submount.

USE - As part of laser transmitter, receiver or transceiver.

ADVANTAGE - The **soft metal** is able to creep or cold flow under pressure to accommodate for varying manufacturing tolerances and varying thermal expansion rates of the components in the laser package.

DESCRIPTION OF DRAWING(S) - The figure shows a side view of a laser package.

Laser die (12)
Photodetector die (14)
Laser driver die (16)
Submount (18)
Solder balls (20)
Interconnects (22)
Lid (24)
Alignment pins (26)
Lens (28)
Soft metal (30,36,42)
Metal pads (32,34,38,40,44,46)
pp; 7 DwgNo 2/7

42/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015812314
WPI Acc No: 2003-874518/200381
Related WPI Acc No: 2004-155152
XRAM Acc No: C03-246762
XRPX Acc No: N03-698230

Semiconductor laser device for optical pick-up of optical disk drive, has reflector attached to side beam incident region of leading end portion of head

Patent Assignee: SHARP KK (SHAF)
Inventor: HONDA M; NOZAKI K; SHIOMOTO T; YOSHIDA T

Number of Countries: 002 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020041612	A1	20020411	US 2001971207	A	20011004	200381	B
JP 2002118320	A	20020419	JP 2000307462	A	20001006	200381	
JP 2002314185	A	20021025	JP 2001112770	A	20010411	200381	
JP 3710720	B2	20051026	JP 2001112770	A	20010411	200570	
US 6967979	B2	20051122	US 2001971207	A	20011004	200577	

Priority Applications (No Type Date): JP 2001112770 A 20010411; JP 2000307462 A 20001006
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020041612	A1		16	H01S-005/00	
JP 2002118320	A		9	H01S-005/022	
JP 2002314185	A		7	H01S-005/022	
JP 3710720	B2		9	H01S-005/022	Previous Publ. patent JP 2002314185
US 6967979	B2			H01S-005/00	

Abstract (Basic): US 20020041612 A1
Abstract (Basic):

NOVELTY - Reflector (7) is attached to a side beam incident region of a leading end portion (32) of a head (3). The reflector reflects the side beam R1' generated by first order beams which are reflected by an optical disk to feed back towards the head through an optical system.

DETAILED DESCRIPTION - The distance between a reflecting plane of the reflector and light emitting point at an outgoing end plane of the laser chip, is 50-150 micrometers. The reflector has saw-toothed configuration, and is formed of thermosetting resin and metal. The reflector is tilted at an angle of 10 degrees. The stem (2) of the laser device (1), includes a mount plane mounted with a semiconductor laser chip (4) and a cross plane facing a laser irradiated portion on which a laser beam emitted from the laser chip strikes. The cross plane is covered with a reflectance reducing material including a conductive die-bond paste that includes epoxy resin and silver. Also the reflectance reducing material which is applied to the mount plane, is used to die-bond the laser chip to the stem.

INDEPENDENT CLAIMS are also included for the following:

(a) Optical pick-up which includes a diffraction grating to diffract the laser beam emitter from the laser chip of the laser device. A beam splitter partially splits the diffracted laser beam. The intensity of the split laser beam is detected by a photodetector; and

(b) Semiconductor laser device fabrication method which involves attaching the reflector to the leading end plane of the head portion. The reflector is made of a metal that is softer than the metal forming the header portion or synthetic resin.

USE - For optical pick-up of optical disk drive.

ADVANTAGE - Since the reflector is attached to the leading end

plane of the header, the breakage of the inclined plane formation portion is prevented. Since the side beam is reflected outside the optical system, the properties of the optical pick-up, are not degraded. The amount of material used for the reflector is reduced. Mass production of the reflector is facilitated, hence the cost of the reflector is reduced. Since the reflectance reducing material scatters and/or absorbs the laser beam directed towards the cross plane, the amount of light reflected at the cross plane towards the optical disk, is reduced. Hence, the tracking error signal is not disturbed even if the tracking control is carried in the optical disk drive. Hence a highly reliable tracking error signal is obtained, even if a high output power semiconductor laser chip is used in the optical disk drive. By minimizing the area over which the reflectance reducing material is applied, the risk of applying the material over light emitting point at the end plane of the laser chip, is reduced.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of a semiconductor laser device.

Laser device (1)
Stem of laser device (2)
Head (3)
Semiconductor laser chip (4)
Reflector (7)
Leading end portion (32)
pp; 16 DwgNo 1/11

42/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

017151800
WPI Acc No: 2005-476145/200548
XRAM Acc No: C05-145126
XRPX Acc No: N05-387403
Laser package as part of laser transmitter, receiver or transceiver comprises **soft metal** between **laser die** and lid and conducting heat between **laser die** and lid
Patent Assignee: MCCOLLOCH L R (MCCO-I)
Inventor: MCCOLLOCH L R
Number of Countries: 001 Number of Patents: 001
Patent Family:
Patent No Kind Date Applicat No Kind Date Week
US 20050129074 A1 20050616 US 2003732994 A 20031210 200548 B

Priority Applications (No Type Date): US 2003732994 A 20031210
Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
US 20050129074 A1 7 H01S-003/04

Abstract (Basic): US 20050129074 A1
Abstract (Basic):
NOVELTY - Laser package comprises a submount (18); a **laser die** (12) mounted on a first surface of the submount; a lid (24) mounted on the first surface of the submount over the **laser die**; and a **soft metal** (30) disposed between the **laser die** and the lid. The **soft metal** conducts heat between the **laser die** and the lid and cold flows faster than the **laser die** and the lid can thermally cycle.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for forming a laser package comprising: mounting a **laser die** on a first surface of a submount; placing a **soft metal** on the lid; and mounting the lid on the submount.
USE - As part of laser transmitter, receiver or transceiver.
ADVANTAGE - The **soft metal** is able to creep or cold flow under pressure to accommodate for varying manufacturing tolerances and varying thermal expansion rates of the components in the laser package.
DESCRIPTION OF DRAWING(S) - The figure shows a side view of a laser package.
Laser die (12)
Photodetector die (14)
Laser driver die (16)
Submount (18)
Solder balls (20)
Interconnects (22)
Lid (24)
Alignment pins (26)
Lens (28)
Soft metal (30,36,42)
Metal pads (32,34,38,40,44,46)
pp; 7 DwgNo 2/7

42/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015812314
WPI Acc No: 2003-874518/200381
Related WPI Acc No: 2004-155152
XRAM Acc No: C03-246762
XRPX Acc No: N03-698230

Semiconductor laser device for optical pick-up of optical disk drive, has reflector attached to side beam incident region of leading end portion of head

Patent Assignee: SHARP KK (SHAF)
Inventor: HONDA M; NOZAKI K; SHIOMOTO T; YOSHIDA T

Number of Countries: 002 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020041612	A1	20020411	US 2001971207	A	20011004	200381	B
JP 2002118320	A	20020419	JP 2000307462	A	20001006	200381	
JP 2002314185	A	20021025	JP 2001112770	A	20010411	200381	
JP 3710720	B2	20051026	JP 2001112770	A	20010411	200570	
US 6967979	B2	20051122	US 2001971207	A	20011004	200577	

Priority Applications (No Type Date): JP 2001112770 A 20010411; JP 2000307462 A 20001006
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020041612	A1		16	H01S-005/00	
JP 2002118320	A		9	H01S-005/022	
JP 2002314185	A		7	H01S-005/022	
JP 3710720	B2		9	H01S-005/022	Previous Publ. patent JP 2002314185
US 6967979	B2			H01S-005/00	

Abstract (Basic): US 20020041612 A1
Abstract (Basic):

NOVELTY - Reflector (7) is attached to a side beam incident region of a leading end portion (32) of a head (3). The reflector reflects the side beam R1' generated by first order beams which are reflected by an optical disk to feed back towards the head through an optical system.

DETAILED DESCRIPTION - The distance between a reflecting plane of the reflector and light emitting point at an outgoing end plane of the laser chip, is 50-150 micrometers. The reflector has saw-toothed configuration, and is formed of thermosetting resin and metal. The reflector is tilted at an angle of 10 degrees. The stem (2) of the laser device (1), includes a mount plane mounted with a semiconductor laser chip (4) and a cross plane facing a laser irradiated portion on which a laser beam emitted from the laser chip strikes. The cross plane is covered with a reflectance reducing material including a conductive die-bond paste that includes epoxy resin and silver. Also the reflectance reducing material which is applied to the mount plane, is used to die-bond the laser chip to the stem.

INDEPENDENT CLAIMS are also included for the following:

(a) Optical pick-up which includes a diffraction grating to diffract the laser beam emitter from the laser chip of the laser device. A beam splitter partially splits the diffracted laser beam. The intensity of the split laser beam is detected by a photodetector; and

(b) Semiconductor laser device fabrication method which involves attaching the reflector to the leading end plane of the head portion. The reflector is made of a metal that is softer than the metal forming the header portion or synthetic resin.

USE - For optical pick-up of optical disk drive.

ADVANTAGE - Since the reflector is attached to the leading end

plane of the header, the breakage of the inclined plane formation portion is prevented. Since the side beam is reflected outside the optical system, the properties of the optical pick-up, are not degraded. The amount of material used for the reflector is reduced. Mass production of the reflector is facilitated, hence the cost of the reflector is reduced. Since the reflectance reducing material scatters and/or absorbs the laser beam directed towards the cross plane, the amount of light reflected at the cross plane towards the optical disk, is reduced. Hence, the tracking error signal is not disturbed even if the tracking control is carried in the optical disk drive. Hence a highly reliable tracking error signal is obtained, even if a high output power semiconductor laser chip is used in the optical disk drive. By minimizing the area over which the reflectance reducing material is applied, the risk of applying the material over light emitting point at the end plane of the laser chip, is reduced.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of a semiconductor laser device.

Laser device (1)
Stem of laser device (2)
Head (3)
Semiconductor laser chip (4)
Reflector (7)
Leading end portion (32)
pp; 16 DwgNo 1/11

44/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013438851
WPI Acc No: 2000-610794/200058
XRAM Acc No: C00-182626
XRPX Acc No: N00-452284
Controlling of output power of semiconductor laser, involves monitoring backward emissions in sweeping motion and adjusting current provided to **drive** each **laser**
Patent Assignee: MOTOROLA INC (MOTI)
Inventor: JIANG W
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6115398	A	20000905	US 9880178	A	19980518	200058	B

Priority Applications (No Type Date): US 9880178 A 19980518
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6115398	A		6	H01S-003/00	

Abstract (Basic): US 6115398 A
Abstract (Basic):
NOVELTY - Output power of a semiconductor laser array is controlled, by injecting in a sweeping motion, a current across an array of edge emitting lasers thus operating edge emitting laser with edge emitting laser array, monitoring a backward emission from each laser, generating feedback signal based on the backward emissions, and providing the signal to each laser.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a semiconductor device, i. e. light emitting device submodule (10) having automatic power control comprising a semiconductor laser array (12) with lasers, a submount (14) for mounting the laser array, and a photosensor integrated with the submount.
USE - None given.
ADVANTAGE - The invention does not require the positioning of individual photosensors for automatic power control of the laser to which it is aligned. The sweeping current injection allows an accurate sensing of emission emitted by each laser device.
DESCRIPTION OF DRAWING(S) - The figure shows a partial cross-sectional view of the submodule.
Semiconductor device submodule (10)
Laser array (12)
Submount (14)
Uppermost (15)
Photosensor (16)
Metal pad (20)
Metal interconnect (22)
Backward emission (28)
pp; 6 DwgNo 1/3

51/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015812314
WPI Acc No: 2003-874518/200381
Related WPI Acc No: 2004-155152
XRAM Acc No: C03-246762
XRPX Acc No: N03-698230
Semiconductor laser device for optical pick-up of optical disk drive, has reflector attached to side beam incident region of leading end portion of head
Patent Assignee: SHARP KK (SHAF)
Inventor: HONDA M; NOZAKI K; SHIOMOTO T; YOSHIDA T
Number of Countries: 002 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020041612	A1	20020411	US 2001971207	A	20011004	200381	B
JP 2002118320	A	20020419	JP 2000307462	A	20001006	200381	
JP 2002314185	A	20021025	JP 2001112770	A	20010411	200381	
JP 3710720	B2	20051026	JP 2001112770	A	20010411	200570	
US 6967979	B2	20051122	US 2001971207	A	20011004	200577	

Priority Applications (No Type Date): JP 2001112770 A 20010411; JP 2000307462 A 20001006
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020041612	A1		16	H01S-005/00	
JP 2002118320	A		9	H01S-005/022	
JP 2002314185	A		7	H01S-005/022	
JP 3710720	B2		9	H01S-005/022	Previous Publ. patent JP 2002314185
US 6967979	B2			H01S-005/00	

Abstract (Basic): US 20020041612 A1
Abstract (Basic):
NOVELTY - Reflector (7) is attached to a side beam incident region of a leading end portion (32) of a head (3). The reflector reflects the side beam R1' generated by first order beams which are reflected by an optical disk to feed back towards the head through an optical system.
DETAILED DESCRIPTION - The distance between a reflecting plane of the reflector and light emitting point at an outgoing end plane of the laser chip, is 50-150 micrometers. The reflector has saw-toothed configuration, and is formed of thermosetting resin and metal. The reflector is tilted at an angle of 10 degrees. The stem (2) of the laser device (1), includes a mount plane mounted with a semiconductor laser chip (4) and a cross plane facing a laser irradiated portion on which a laser beam emitted from the laser chip strikes. The cross plane is covered with a reflectance reducing material including a conductive die-bond paste that includes epoxy resin and silver. Also the reflectance reducing material which is applied to the mount plane, is used to die-bond the laser chip to the stem.
INDEPENDENT CLAIMS are also included for the following:
(a) Optical pick-up which includes a diffraction grating to diffract the laser beam emitter from the laser chip of the laser device. A beam splitter partially splits the diffracted laser beam. The intensity of the split laser beam is detected by a photodetector; and
(b) Semiconductor laser device fabrication method which involves attaching the reflector to the leading end plane of the head portion. The reflector is made of a metal that is softer than the **metal** forming the header portion or synthetic resin.

USE - For optical pick-up of optical disk drive.

ADVANTAGE - Since the reflector is attached to the leading end plane of the header, the breakage of the inclined plane formation portion is prevented. Since the side beam is reflected outside the optical system, the properties of the optical pick-up, are not degraded. The amount of material used for the reflector is reduced. Mass production of the reflector is facilitated, hence the cost of the reflector is reduced. Since the reflectance reducing material scatters and/or absorbs the laser beam directed towards the cross plane, the amount of light reflected at the cross plane towards the optical disk, is reduced. Hence, the tracking error signal is not disturbed even if the tracking control is carried in the optical disk drive. Hence a highly reliable tracking error signal is obtained, even if a high output power semiconductor laser chip is used in the optical disk drive. By minimizing the area over which the reflectance reducing material is applied, the risk of applying the material over light emitting point at the end plane of the laser chip, is reduced.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of a semiconductor laser device.

Laser device (1)
Stem of laser device (2)
Head (3)
Semiconductor laser chip (4)
Reflector (7)
Leading end portion (32)
pp; 16 DwgNo 1/11

53/3,AB/3 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

0641368 NTIS Accession Number: AD-A041 566/1/XAB
CL XI Nozzle F2 Absorption Experiment
(Interim rept)
Spencer, D. J. ; Beggs, J. A.
Aerospace Corp El Segundo Calif Aerophysics Lab
Corp. Source Codes: 409367
Report No.: TR-0077(2607)-1; SAMSO-TR-77-107
15 Jun 77 24p
Journal Announcement: GRAI7719
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A02/MF A01
An F2-absorption diagnostic technique was developed to determine F2 densities in the flow of a 10.2-cm-long TRW CL XI nozzle. The device was transported to the site, set up, tested, and returned to TRW in two days. Hence, the diagnostic device was demonstrated to be readily transportable and to be operable in a combustion-**driven**, chemical-**laser** field environment. **Cold**- and hot-**flow** measurements up to 970 K plenum temperature, i.e., no F2 dissociation, were in agreement; therefore, this measurement appears to be reliable.

53/3,AB/4 (Item 2 from file: 6)
DIALOG(R)File 6:NTIS

0560352 NTIS Accession Number: AD-A026 296/4/XAB
Kinetics of Advanced Gasdynamic Lasers
(Addendum to final rept. 1 Jul-31 Oct 75)
Anderson, J. D.
Maryland Univ College Park Dept of Aerospace Engineering
Corp. Source Codes: 401860
Report No.: AFOSR-TR-76-0173
May 75 9p
Journal Announcement: GRAI7618
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A02/MF A01
A short survey of gasdynamic lasers was made, and a study of advanced fuels for combustion-**driven** gasdynamic **lasers** was completed and published. The proper kinetic rate equations for HF chemical lasers were incorporated into the previously reported **cold-flow** Navier-Stokes solutions. These calculations introduce a new third/generation of chemical laser analysis. (Author)

53/3,AB/5 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03336359
E.I. Monthly No: EIM9111-057523
Title: In-situ measurement of piston jitter in a ring resonator.
Author: Cunningham, P. R.; Hay, S. O.; Francis, D. M.; Trott, G. E.
Corporate Source: United Technologies Research Cent, East Hartford, CT, USA
Conference Title: Laser Beam Diagnostics
Conference Location: Los Angeles, CA, USA Conference Date: 19910121
E.I. Conference No.: 14927
Source: Proceedings of SPIE - The International Society for Optical Engineering v 1414. Publ by Int Soc for Optical Engineering, Bellingham, WA, USA. p 97-129
Publication Year: 1991
CODEN: PSISDG ISSN: 0277-786X
Language: English
Abstract: A method was developed for relative distance measurements of long optical pathlengths of up to 40 m with good distance resolution up to plus or minus 5 nm (lambda /120 at 0.6238 mu) and moderat temporal resolution up to 250 Hz, sufficient to quantify low and moderate frequency piston jitter of a ring resonator. The measurment scheme used two frequency interferometry using laser probe beams and was based upon a fringe counting technique utilizing a modified Hewlett-Packard (HP) Model 5527A distance measuring interferometer. Modifications included a much different interferometer than that available from HP and a high performance receiver front-end based upon an avalanche photodetector. The interferometric method enabled in-situ resonator piston jitter measurements, internal to the resonator optical train, which were insensitive to optical disturbances external to the resonator. In an experimental demonstration, portions of a ring resonator optical train were installed in a supersonic combustion **driven laser** test-bed and its vibrational characteristics analyzed using this method. Data was recorded and analyzed during quiescent, vacuum pumps-on and '**cold flow**' conditions with variations of number and combination of optical mounts. The data indicated that a high quality state-of-the art translation stage incorporated in the ring resonator design was not sufficiently stable for the ring resonator design requirements. The data also indicated that the facility disturbances during pumps-on and '**cold flow**' conditions significantly increased piston jitter. On the other hand, the device flow disturbances of the laser probe beams crossing the gain **flow** region during ' **cold flows**' and disturbances due to table bending and twisting between two optic vacuum optic boxes were minimal. Facility disturbance data measured by accelerometers and tilt disturbances measured by a laser probe beam incident upon a position sensor are also included. A design is presented for an interferometer which can be integral to an operating unstable ring resonator. (Author abstract)

53/3,AB/6 (Item 1 from file: 315)
DIALOG(R)File 315:ChemEng & Biotec Abs

524439 CEABA Accession No.: 35-07-000275 DOCUMENT TYPE: Journal
Title: Solidification of a binary mixture in a shear flow
Orig. Title: Erstarren eines binaeren Gemischs in einer Scherstromung
AUTHOR: Mergui, S. ; Feroual, B. ; Gobin, D. ; Benard, C.
CORPORATE SOURCE: Univ. Paris VI a. Paris XI, CNRS, Orsay, F
JOURNAL: Int. J. Heat Mass Transf., Volume: 47, Issue: 6-7, Page(s): 1423-1432
CODEN: IJHMAK ISSN: 00179310
PUBLICATION DATE: 2004 (20040000)

ABSTRACT: Modelling the solidification of binary solutions **flowing** along **cold** surfaces has proved difficult in the past. The model presented in this paper limits the effects of natural convection on the phase change process by uncoupling heat and mass transfer mechanisms at the solidifying interface. Using the solidification of NH₄Cl/H₂O solution on a horizontal cold heat exchanger as a model system, a reference experiment (pure water) allowed estimation of the heat transfer coefficient at the solid/liquid interface. Experiments performed under similar thermal conditions with various solute concentrations (0,4 and 8 %) revealed the effect of solute redistribution on the time evolution of the front position and temperature. Solute rejection at the interface was found to influence both equilibrium temperatures at the solidification front, and time evolution of the solid phase. Comparison with the numerical solution of a simple thermal phase change model indicated solidification dynamics were comparable to those of a porous structure (with a solid fraction of circa 0.9) and compatible with the dendritic structures that were observed to form.

ABSTRACT: Die Verf. untersuchten experimentell und theoretisch das Ausfrieren von NH₄Cl aus einer laminar stromenden waessrigen Losung an einer gekuehlten Flaeche. Hierbei wurde ein horizontal angeordneter mit einer Spitze versehener Quader verwendet (Breite 4 cm, Dicke 2 cm, Laenge 20 cm), der in einem großen rechteckigen Stromungskanal eingetaucht war. Die Stromungsgeschwindigkeit der Losung betrug 2 cm/s, was einer mit der Quaderlaenge gebildeten Reynolds-Zahl von 2500 entspricht. Die NH₄Cl-Konzentration betrug 0,4 oder 8 Ma%. Mit Hilfe von **Laserstrahlen** wurde **die** Schichtdicke der festen Phase laengs der oberen und unteren Kuehlflaeche als Funktion der Zeit gemessen. Zur Berechnung der lokalen Schichtdicke als Funktion der Zeit wird von der lokalen Energiebilanz an der Phasengrenzflaeche fest-fluessig ausgegangen. In der festen Phase wird ein lineares Temperaturprofil angenommen. Eine freie Konvektion bleibt unberuecksichtigt. Der lokale Waermeuebergangskoeffizient an der Phasengrenzflaeche fest-fluessig wird mit Hilfe des asymptotischen Grenzwerts fuer die lokale Schichtdicke ermittelt. Die effektive Waermeleitfaehigkeit der festen Phase wird aus den mit den Volumenanteilen gewichteten Waermeleitfaehigkeiten fuer NH₄C l und Wasser ermittelt. Die beste uebereinstimmung zwischen berechneten und gemessenen Schichtdicken ergab sich bei Annahme eines Volumenanteils des Wassers von 10 %. Die an verschiedenen Stellen auf den gekuehlten Flaechen als Funktion der Zeit berechneten und gemessenen Schichtdicken stimmen gut ueberein.

53/3,AB/7 (Item 2 from file: 315)
DIALOG(R)File 315:ChemEng & Biotec Abs

516925 CEABA Accession Number: 35-01-000532 DOCUMENT TYPE: Journal
Title: Detection of methane with high spatial resolution with photothermal deflection spectroscopy
Orig. Title: Nachweis von Methan mit hoher raeumlicher Aufloesung mit der photothermischen Ablenkungsspektroskopie
AUTHOR: Li, Y. ; Gupta, R.
CORPORATE SOURCE: Univ. of Arkansas, Fayetteville AR, USA

JOURNAL: Appl. Opt., Volume: 42, Issue: 21, Page(s): 4396-4399
CODEN: APOPAI ISSN: 00036935
PUBLICATION DATE: 2003 (20030000)
ABSTRACT: For trace gas detection, as well as conventional (direct) absorption spectroscopy, indirect methods such as the long known photothermal deflection spectroscopy (PTDS) may be used. In this method, the sample to be investigated is irradiated with a pulsed laser; a second laser beam then detects the change in refractive index caused by absorption in the medium. From the amplitude of the deflection, the concentration of the desired species can be determined via the absorption coefficient. PTDS has the advantage that compared to the direct absorption method, measurements can be made with high spatial resolution, which is given by the crossing angle of the two laser beams. In the gas phase, the method has so far been used to detect e.g. OH-radicals and NO(sub 2). Since methane is also of great importance, for example, in the atmosphere (as a greenhouse gas), in combustion and in deposition of diamond films, PTDS was also applied to the detection this species. In the present experiment, a combination-overtone band of CH(sub 4) -initially in a **cold flow** -was excited by a YAG-pumped dye laser at 727 nm. For detection, the deflection of a He-Ne laser beam at 633 nm was measured. The known theoretical expression was used to evaluate the CH(sub 4)-concentration. In principle, the measurement technique is absolute and requires no calibration. However, in order to obtain quantitative results, knowledge of the relaxation paths and relaxation time constants of the excited state is needed. In the present experiments, the sensitivity was relatively poor, since a weak overtone band was excited. By selecting a fundamental band, a much higher sensitivity (ca.100 ppm at 0,3 ms in a volume of 0,2mm(sup 3)) could be achieved. Additionally, methane was detected in premixed and diffusion flames, where the main interest was to determine the concentration of the unburned fuel. The measurements were not quantified in this work, but a further paper is cited, in which the quantification procedure is described.

ABSTRACT: Zum Spurengasnachweis koennen neben der konventionellen direkten Absorptionsspektroskopie auch indirekte Methoden wie z. B. die laenger bekannte photothermische Ablenkung (engl. photothermal deflection spectroscopy, PTDS) verwendet werden. Im Verfahren wird die zu untersuchende Probe mit einer gepulsten **Laser** bestrahlt und **die** in der Probe auftretende Aenderung des Brechungsindex durch die Ablenkung eines zweiten Laserstrahls detektiert. Aus der Amplitude der Ablenkung laesst sich die Konzentration der gewuenschten Spezies ueber den Absorptionskoeffizienten des interessierenden Teilchens ermitteln. PTDS hat den Vorteil, dass bei geeigneter Wahl des Kreuzungswinkels der beiden Laser eine hohe raeumliche Aufloesung moeglich ist. In der Gasphase wurde das Verfahren zum Nachweis z. B. von OH-Radikalen und NO(sub 2) eingesetzt. Da auch Methan eine bedeutende Spezies u. a. in der Atmosphaere (als Treibhausgas), in der Verbrennung und bei der Ablagerung von Diamantenfilmen darstellt, wird hier PTDS auf den Methannachweis angewandt. Im Versuch wird eine Kombinations-Uebertonbande von CH(sub 4) -zunaechst in einer kalten Stroemung -durch einen vom gepulsten YAG-Laser gepumpten Farbstofflaser bei 727 nm angeregt. Zum Nachweis wurde die Ablenkung eines He-Ne-Laserstrahls bei 633 nm gemessen. Die zeitliche Entwicklung der gemessenen Strahlablenkung wird mit dem bekannten theoretischen Ausdruck ausgewertet, um die CH(sub 4)-Konzentration zu ermitteln. Prinzipiell ist das Messverfahren absolut und bedarf keiner Kalibration. Um aber quantitative Ergebnisse zu erhalten, sind noch Kenntnisse der Relaxationswege und -zeiten des angeregten Zustands

notwendig. Ferner war bei diesen Versuchen die Empfindlichkeit relativ gering, da eine schwache Uebertonbande angeregt wurde. Bei Wahl einer Fundamentalbande waere eine deutlich hoehere Empfindlichkeit (ca. 100 ppm bei 0,3 ms in 0,2 mm(sup 3)) erzielbar. Neben der Demonstration des Verfahrens in der kalten Stroemung wurde Methan auch in einer Vormisch-sowie einer Diffusionsflamme mit PTDS nachgewiesen. Hier ging es darum, die Konzentration des unverbrannten Brennstoffs zu ermitteln. Die Messungen wurden hier nicht quantifiziert, es wird aber auf eine weitere Arbeit verwiesen, wo die Quantifizierungsprozedur beschrieben wird.

53/3,AB/8 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

017151800
WPI Acc No: 2005-476145/200548
XRAM Acc No: C05-145126
XRPX Acc No: N05-387403
Laser package as part of laser transmitter, receiver or transceiver comprises soft metal between **laser die** and lid and conducting heat between **laser die** and lid
Patent Assignee: MCCOLLOCH L R (MCCO-I)
Inventor: MCCOLLOCH L R
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20050129074	A1	20050616	US 2003732994	A	20031210	200548	B

Priority Applications (No Type Date): US 2003732994 A 20031210
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20050129074	A1		7	H01S-003/04	

Abstract (Basic): US 20050129074 A1
Abstract (Basic):
NOVELTY - Laser package comprises a submount (18); a **laser die** (12) mounted on a first surface of the submount; a lid (24) mounted on the first surface of the submount over the **laser die**; and a soft metal (30) disposed between the **laser die** and the lid. The soft metal conducts heat between the **laser die** and the lid and **cold flows** faster than the **laser die** and the lid can thermally cycle.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for forming a laser package comprising: mounting a **laser die** on a first surface of a submount; placing a soft metal on the lid; and mounting the lid on the submount.
USE - As part of laser transmitter, receiver or transceiver.
ADVANTAGE - The soft metal is able to **creep** or **cold flow** under pressure to accommodate for varying manufacturing tolerances and varying thermal expansion rates of the components in the laser package.
DESCRIPTION OF DRAWING(S) - The figure shows a side view of a laser package.
Laser die (12)
Photodetector die (14)
Laser driver die (16)

Submount (18)
Solder balls (20)
Interconnects (22)
Lid (24)
Alignment pins (26)
Lens (28)
Soft metal (30,36,42)
Metal pads (32,34,38,40,44,46)
pp; 7 DwgNo 2/7

53/3,AB/9 (Item 1 from file: 23)
DIALOG(R)File 23:CSA Technology Research Database

0004505943 IP ACCESSION NO: 2001-13-006061
Experimental investigation of a simulated LOX injector flow field and other nonintrusive measurement efforts

Hartfield, Roy J, Jr
Auburn University, AL. Dept. of Aerospace Engineering.

ADDL. SOURCE INFO: In Alabama University, 1992 NASA/ASEE Summer Faculty Fellowship Program 5 p (SEE N93-17279 05-80)
PUBLICATION DATE: 1992

DOCUMENT TYPE: Conference
RECORD TYPE: Abstract
LANGUAGE: English
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts

ABSTRACT:
Efforts to improve the characteristics of fuel-oxidizer mixing in liquid rocket combustors have lead to a swirl element design for a liquid oxygen injector which is being considered for use on the STME. For the design which is the subject of this investigation, the oxygen enters the injector element perpendicular to the injector axis and nearly tangent to the circular injector wall. This swirl element is at one end of a tube and the injector exit is at the other. This geometric configuration creates a plume in the shape of a conical sheet. This sheet is either primarily contiguous liquid or droplets depending on the pressure drop in the injector and the distance from the injector exit. Probe-based devices such as two-dimensional grid patternators have been used to investigate simulated LOX injector flow fields (Hulka). The primary work described herein is an effort to use optical techniques to investigate the plume of a swirl injector element. For this investigation, a high pressure (500 psig) **cold flow** test facility was constructed. Water was used as the LOX simulate and air pressure was used to drive the injector flow field. Laser-induced fluorescence (LIF) from dye seeded into the water was used to obtain quantitative measurements of the time-averaged water concentration distribution in the plume. Scattered laser light and LIF were used for time averaged plume visualization and scattered light from a strobe with a 1 microsecond pulse was used for time-resolved plume visualization. During the Summer Faculty Fellowship for which this report was developed, an additional effort, unrelated to the swirl injector investigation, was made to resolve fluctuations in the combustion product composition in the exhaust of a hybrid rocket motor. A brief description of this effort is included herein. (Author)
Abstract

56/3,AB/1 (Item 1 from file: 315)
DIALOG(R)File 315:ChemEng & Biotec Abs

524439 CEABA Accession Number: 35-07-000275 DOCUMENT TYPE: Journal
Title: Solidification of a binary mixture in a shear flow
Orig. Title: Erstarren eines binaeren Gemischs in einer Scherstromung
AUTHOR: Mergui, S. ; Feroual, B. ; Gobin, D. ; Benard, C.
CORPORATE SOURCE: Univ. Paris VI a. Paris XI, CNRS, Orsay, F
JOURNAL: Int. J. Heat Mass Transf., Volume: 47, Issue: 6-7, Page(s): 1423-1432
CODEN: IJHMAK ISSN: 00179310
PUBLICATION DATE: 2004 (20040000)
ABSTRACT: Modelling the solidification of binary solutions **flowing** along **cold** surfaces has proved difficult in the past. The model presented in this paper limits the effects of natural convection on the phase change process by uncoupling **heat** and mass **transfer** mechanisms at the solidifying interface. Using the solidification of NH₄Cl/H₂O solution on a horizontal cold heat exchanger as a model system, a reference experiment (pure water) allowed estimation of the **heat transfer** coefficient at the solid/liquid interface. Experiments performed under similar thermal conditions with various solute concentrations (0,4 and 8 %) revealed the effect of solute redistribution on the time evolution of the front position and temperature. Solute rejection at the interface was found to influence both equilibrium temperatures at the solidification front, and time evolution of the solid phase. Comparison with the numerical solution of a simple thermal phase change model indicated solidification dynamics were comparable to those of a porous structure (with a solid fraction of circa 0.9) and compatible with the dendritic structures that were observed to form.

ABSTRACT: Die Verf. untersuchten experimentell und theoretisch das Ausfrieren von NH₄Cl aus einer laminar stromenden waessrigen Losung an einer gekuehlten Flaeche. Hierbei wurde ein horizontal angeordneter mit einer Spitze versehener Quader verwendet (Breite 4 cm, Dicke 2 cm, Laenge 20 cm), der in einem großen rechteckigen Stromungskanal eingetaucht war. Die Stromungsgeschwindigkeit der Losung betrug 2 cm/s, was einer mit der Quaderlaenge gebildeten Reynolds-Zahl von 2500 entspricht. Die NH₄Cl-Konzentration betrug 0,4 oder 8 Ma%. Mit Hilfe von **Laserstrahlen** wurde **die** Schichtdicke der festen Phase laengs der oberen und unteren Kuehlflaeche als Funktion der Zeit gemessen. Zur Berechnung der lokalen Schichtdicke als Funktion der Zeit wird von der lokalen Energiebilanz an der Phasengrenzflaeche fest-fluessig ausgegangen. In der festen Phase wird ein lineares Temperaturprofil angenommen. Eine freie Konvektion bleibt unberuecksichtigt. Der lokale Waermeuebergangskoeffizient an der Phasengrenzflaeche fest-fluessig wird mit Hilfe des asymptotischen Grenzwerts fuer die lokale Schichtdicke ermittelt. Die effektive Waermeleitfaehigkeit der festen Phase wird aus den mit den Volumenanteilen gewichteten Waermeleitfaehigkeiten fuer NH₄C l und Wasser ermittelt. Die beste uebereinstimmung zwischen berechneten und gemessenen Schichtdicken ergab sich bei Annahme eines Volumenanteils des Wassers von 10 %. Die an verschiedenen Stellen auf den gekuehlten Flaechen als Funktion der Zeit berechneten und gemessenen Schichtdicken stimmen gut ueberein.

012589421
WPI Acc No: 1999-395528/199933
XRPX Acc No: N99-295628
Thermally improved slab laser pump cavity apparatus with integral concentrator
Patent Assignee: RAYTHEON CO (RAYT)
Inventor: BYREN R W
Number of Countries: 021 Number of Patents: 008
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9933149	A1	19990701	WO 98US26002	A	19981208	199933	B
AU 9917163	A	19990712	AU 9917163	A	19981208	199950	
EP 974177	A1	20000126	EP 98961984	A	19981208	200010	
			WO 98US26002	A	19981208		
US 6014391	A	20000111	US 97994422	A	19971219	200010	
AU 730093	B	20010222	AU 9917163	A	19981208	200115	
EP 974177	B1	20020306	EP 98961984	A	19981208	200219	
			WO 98US26002	A	19981208		
DE 69804084	E	20020411	DE 604084	A	19981208	200232	
			EP 98961984	A	19981208		
			WO 98US26002	A	19981208		
IL 130740	A	20021110	IL 130740	A	19981208	200282	

Priority Applications (No Type Date): US 97994422 A 19971219
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9933149	A1	E	22	H01S-003/06	
Designated States (National): AU IL					
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
AU 9917163	A			H01S-003/06	Based on patent WO 9933149
EP 974177	A1	E		H01S-003/06	Based on patent WO 9933149
Designated States (Regional): DE FR GB					
US 6014391	A			H01S-003/04	
AU 730093	B			H01S-003/06	Previous Publ. patent AU 9917163 Based on patent WO 9933149
EP 974177	B1	E		H01S-003/06	Based on patent WO 9933149
Designated States (Regional): DE FR GB					
DE 69804084	E			H01S-003/06	Based on patent EP 974177 Based on patent WO 9933149
IL 130740	A			H01S-003/04	Based on patent WO 9933149

Abstract (Basic): WO 9933149 A1
Abstract (Basic):

NOVELTY - Absorbing regions (16) at the edges of an active region (4) are preferably diffusion bonded to the active region in a cladding region (3) and contain the same crystal host material as the active region but are doped with ions so that they absorb energy at the pump wavelength and release energy in the form of heat. The absorbing regions produce a uniform heat **flow** together with **cold** plates, while a thermal interface (7) has a variable thickness.

USE - The laser cavity is used for solid state slab lasers.

ADVANTAGE - Providing efficient **heat transfer** with uniform temperature gradient across active lasing region.

DESCRIPTION OF DRAWING(S) - The drawing is an illustration of laser pump cavity apparatus with absorbing regions at the slab edges.

Absorbing regions (16)

Active region (4)
Cladding region (3)
Thermal interface (7)
pp; 22 DwgNo 2/5

61/3,AB/1 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03336359
E.I. Monthly No: EIM9111-057523
Title: In-situ measurement of piston jitter in a ring resonator.
Author: Cunningham, P. R.; Hay, S. O.; Francis, D. M.; Trott, G. E.
Corporate Source: United Technologies Research Cent, East Hartford, CT, USA
Conference Title: Laser Beam Diagnostics
Conference Location: Los Angeles, CA, USA Conference Date: 19910121
E.I. Conference No.: 14927
Source: Proceedings of SPIE - The International Society for Optical Engineering v 1414. Publ by Int Soc for Optical Engineering, Bellingham, WA, USA. p 97-129
Publication Year: 1991
CODEN: PSISDG ISSN: 0277-786X
Language: English
Abstract: A method was developed for relative distance measurements of long optical pathlengths of up to 40 m with good distance resolution up to plus or minus 5 nm (lambda /120 at 0.6238 mu) and moderat temporal resolution up to 250 Hz, sufficient to quantify low and moderate frequency piston jitter of a ring resonator. The measurment scheme used two frequency interferometry using laser probe beams and was **based** upon a fringe counting technique utilizing a modified Hewlett-Packard (HP) Model 5527A distance measuring interferometer. Modifications included a much different interferometer than that available from HP and a high performance receiver front-end **based** upon an avalanche photodetector. The interferometric method enabled in-situ resonator piston jitter measurements, internal to the resonator optical train, which were insensitive to optical disturbances external to the resonator. In an experimental demonstration, portions of a ring resonator optical train were installed in a supersonic combustion **driven laser** test-bed and its vibrational characteristics analyzed using this method. Data was recorded and analyzed during quiescent, vacuum pumps-on and '**cold flow**' conditions with variations of number and combination of optical mounts. The data indicated that a high quality state-of-the art translation stage incorporated in the ring resonator design was not sufficiently stable for the ring resonator design requirements. The data also indicated that the facility disturbances during pumps-on and '**cold flow**' conditions significantly increased piston jitter. On the other hand, the device flow disturbances of the laser probe beams crossing the gain **flow** region during ' **cold flows**' and disturbances due to table bending and twisting between two optic vacuum optic boxes were minimal. Facility disturbance data measured by accelerometers and tilt disturbances measured by a laser probe beam incident upon a position sensor are also included. A design is presented for an interferometer which can be integral to an operating unstable ring resonator. (Author abstract)